



**Faculty of Agricultural and Environmental
Sciences, including School of Human Nutrition
Programs, Courses and University Regulations
2022-2023**

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

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

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

2 History of the Faculty

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

Currently, Macdonald Campus is home to the Faculty of Agricultural and Environmental Sciences, the School of 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 Bieler School of Environment, and is also home to the Farm Management and Technology Program. The current enrolment exceeds 2,000 undergraduate and graduate students.

3 Macdonald Campus Facilities

3.1 Morgan Arboretum

The Morgan Arboretum is one of McGill's teaching and research stations. It has 245 hectares of managed and natural woodlands, fields, and tree plantations used for environmental research and teaching in a wide range of courses. Eighteen formal tree collections contain groups of Canadian native trees and many useful and important exotics. In addition, over 170 species of birds, 30 species of mammals, and 20 species of reptiles and amphibians seasonally inhabit the property. The Arboretum features 25 kilometres of ski, snowshoe, and walking trails in a variety of forest ecosystems that are available for members of the Morgan Arboretum and visitors. A nature interpretation program is also offered at different times of the year. Conservation projects and forest operations, such as the production of maple syrup and firewood, are routinely done on a small scale basis. More information is available at mcgill.ca/nrs/facilities/arb2168.02a0 9A71.

3.2 Macdonald Campus Library

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

The Library's website leads users to a wealth of information, including the library catalogue, article databases, McGill theses, and instructive web pages on how to gain access to the material and services available to users. The Library's eZone computers provide specialized software such as ArcGIS, STATA, and EndNote. Printer-photocopiers, comfortable seating, three group study rooms equipped with LCD monitors the 1o8su3e o6.606 Tm(r)Tj1 0 67a0 67a0 67a0r.quipped

For more information and to search the IT Knowledge Base, visit the IT Services web page at mcgill.ca/it.

3.4 Lyman Entomological Museum and Research Laboratory

4.3 Administrative Officers

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

Anja Geitmann

Associate Deans

Valérie Orsat; Salwa Karboune; Marilyn E. Scott; Jean-Benoit Charron.

Manager, Student Affairs

Silvana Pellecchia

Director, Academic and Administrative Services

4.5.2 The Student Affairs Office

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

Website: mcgill.ca/macdonald/studentinfo/sao

4.5.3 Student Services

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

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

4.5.4 Macdonald Campus Residences

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

4.5.5 Student Life

All undergraduate and Farm Management and Technology students are members of the [Macdonald Campus Students' Society](#) (MSCC). The MSCC, through the Students' Council, is involved in numerous campus activities such as social ev

4.6 Faculty Information and Regulations

Each student in the Faculty of Agricultural and Environmental Sciences must be aware of the Faculty Regulations as stated in this publication.

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

4.6.1 Minimum Credit Requirement

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

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

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

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

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

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

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

4.6.2 Minimum Grade Requirement

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

4.6.3 Academic Advisers

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

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

4.6.4 Categories of Students

4.6.4.1 Full-time Students

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

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

4.6.4.2 Part-time Students

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

4.6.5 Academic Standing

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

The following rules apply to your Academic Standing:

1. When your CGPA (or TGPA in the first term of the program) falls below 2.00, your Academic Standing becomes Probationary.
2. If you are in Probationary Standing, you may register for no more than 14 credits per term.

3. While in Probationary Standing, you must achieve a TGPA of 2.50 to continue in Probationary Standing or a CGPA of 2.00 in order to return to Satisfactory Standing. Failure to meet at least one of these conditions will result in Unsatisfactory Standing. (In the case of Fall term, this will be Interim Unsatisfactory Standing and the rules for Probationary Standing will apply.)
4. When your CGPA (or TGPA in the first term of the program) falls below 1.50, your Academic Standing becomes Unsatisfactory and you must withdraw. (In the case of Fall term, the Standing will be Interim Unsatisfactory Standing and the rules for Probationary Standing will apply.)
5. If you are in Unsatisfactory Standing, you may not continue in your program. You may apply for readmission only after your registration has been interrupted for at least one term (not including Summer term).
6. Readmission will be in the Standing Unsatisfactory/Readmit and a CGPA of 2.00 must be achieved to return to Satisfactory Standing or a TGPA of 2.50 must be achieved for Probationary Standing. If you fail to meet at least one of these conditions, you will be required to withdraw permanently.
7. Students in the School of Hu492m7Nutriion hasj1 0 0 1 479.O 0 0 1 81.6931 be in thmatisfStudents in sec0 0 16.5.1524.508 656.02 TmStudents in : Bac540.252 64

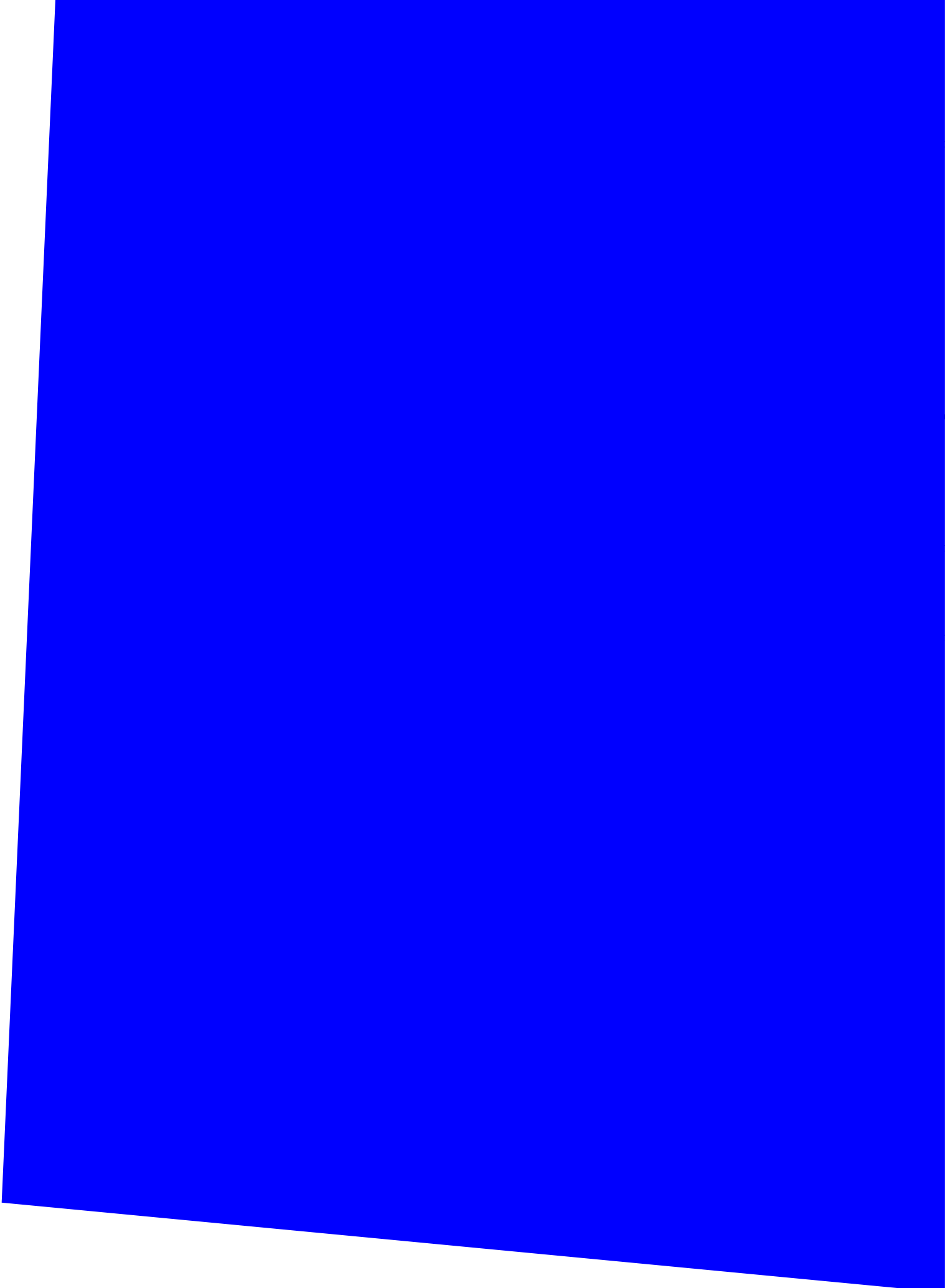
5. Normally, proposals for Second Academic Majors will be initiated before completion of U1 year of the First Academic Major.
6. The academic standards applicable to each major will be respected.

4.6.8.1 Procedures for Minor Programs

If you want to register for a Minor program, you must complete a [Minor Approval form](#) (usually at the beginning of your U2 year), and return it duly completed to the Student Affairs Office. The Minor program will then be added to your record and will automatically continue each year unless you officially cancel it in writing. If you want to cancel the Minor, you must notify both the Minor Adviser and the Student Affairs Office. The Minor Approval form is available on the Faculty website and in the Student Affairs Office, Laird Hall, Room 106.

4.6.9 Course Change Information

1. **Courses:** please refer to [University Regulations and Resources](#) > Undergraduate > Registration > : [Course Change Period](#), and the [Important Dates website](#).
2. **Course withdrawal** (Transcript notation of “W”): please refer to [University Regulations and Resources](#) > Undergrad



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

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

5.3.1 Majors and Honours

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

- Agricultural Economics *
- Agro-environmental Sciences *
- Environmental Biology
- Global Food Security
- Life Sciences (Biological and Agricultural)
- Environment – see [Bieler School of Environment](#) >

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

Bioresource engineering is a unique branch of engineering that encompasses biological engineering, agricultural engineering, food engineering, environmental engineering and other traditional engineering disciplines, focusing on applying professional engineering skills to biological systems. The fundamental basis of bioresource engineering is transdisciplinary interactions between engineering science and design, with biological, physical, chemical, and other natural sciences. Bioresource engineers strive to design and implement solutions to sustain food supply and the well-being of society while maintaining high-quality of the environment for generations to come.

Together with other B.Eng. programs offered by peer engineering departments in the Faculty of Engineering, Bioresource Engineering is accredited through Engineers Canada Accreditation Boards. Therefore, graduates of the bachelor bioresource engineering program are eligible for registration as professional engineers in any province in Canada, as well as some international jurisdictions. The available Professional Agrology option also qualify graduates to apply for registration to the *Ordre des agronomes du Québec* and similar licensing bodies in other provinces.

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

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

Through the **Bio-Process Engineering** stream, students apply engineering to transform agricultural commodities and biomass into products such as food, fibre, fuel, and biochemicals. T

Global Nutrition
Health and Disease
Nutritional Biochemistry
Sports Nutrition

- Food Science/Nutritional Sciences (concurrent degree)

Refer to [section 6.5: Bachelor of Science \(Nutritional Sciences\) – B.Sc.\(Nutr.Sc.\)](#) for a full list of B.Sc.(Nutr.Sc.) programs offered.

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

Freshman Adviser

Professor Alice Cherestes
Macdonald-Stewart Building, Room 1-020
Telephone: 514-398-7980

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

Please refer to [section 6.4.4: About the Concurrent B.Sc.\(F.Sc.\) and B.Sc.\(Nutr.Sc.\)](#) for details.

5.8 Honours Programs (Overview)

Honours Programs

- [section 6.2.1.2: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Honours Agricultural Economics \(42 credits\)](#)
- [section 6.2.1.4: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Honours Agro-Environmental Sciences \(54 credits\)](#)
- [section 6.2.1.6: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Honours Environmental Biology \(54 credits\)](#)
- [section 6.2.1.8: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Honours Global Food Security \(54 credits\)](#)
- [section 6.2.1.10: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Honours Life Sciences \(Biological and Agricultural\) \(54 credits\)](#)
- [section 6.3.2: Bachelor of Engineering \(Bioresource\) \(B.Eng.\(Bioresource\)\) - Honours Bioresource Engineering \(113 credits\)](#)
- [section 6.4.2: Bachelor of Science \(Food Science\) \(B.Sc.\(F.Sc.\)\) - Honours Food Science - Food Science Option \(90 credits\)](#)
- [section 6.4.4.2: Concurrent Bachelor of Science in Food Science \(B.Sc.\(F.Sc.\)\) and Bachelor of Science Nutritional Sciences \(B.Sc.\(Nutr.Sc.\)\) - Food Science/Nutritional Science Honours \(Concurrent\) \(122 credits\)](#)
- [: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Honours Environment \(69 credits\)](#), listed under the [Bieler School of Environment](#)

5.9 Minor Programs (Overview)

Minor Programs

- Agribusiness Entrepreneurship – [section 6.6.2: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Minor Agribusiness Entrepreneurship \(18 credits\)](#)
- Agricultural Economics – [section 6.6.3: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Minor Agricultural Economics \(24 credits\)](#)
- Agricultural Production – [section 6.6.4: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Minor Agricultural Production \(24 credits\)](#)
- Animal Biology – [section 6.6.5: Bachelor of Engineering \(Bioresource\) \(B.Eng.\(Bioresource\)\) - Minor Animal Biology \(24 credits\)](#)
- Animal Health and Disease – [section 6.6.6: Bachelor of Engineering \(Bioresource\) \(B.Eng.\(Bioresource\)\) - Minor Animal Health and Disease \(24 credits\)](#)
- Applied Ecology – [section 6.6.7: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Minor Applied Ecology \(24 credits\)](#)
- Ecological Agriculture – [section 6.6.8: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Minor Ecological Agriculture \(24 credits\)](#)
- Environmental Engineering – [section 6.6.9: Minor in Environmental Engineering](#)

- Human Nutrition – [section 6.6.10: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Minor Human Nutrition \(24 credits\)](#)
- International Agriculture – [section 6.6.11: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Minor International Agriculture \(24 credits\)](#)
- Environment – listed under [Bieler School of Environment > Undergraduate > Minor in Environment > : Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) or Bachelor of Science \(B.Sc.\) - Minor Environment \(18 credits\)](#)
- Some minors of interest to FAES students can also be found at : [Minors for Non-Management Students](#) – listed under [Desautels Faculty of Management](#)

5.10 Post-Baccalaureate Certificate Programs (Overview)

The Faculty offers the following post-baccalaureate certificate programs.

Post-Baccalaureate Certificate Programs

- Ecological Agriculture
- Food Science

Please refer to [section 6.7: Post-Baccalaureate Certificate Programs](#) for program descriptions and details.

5.11 Diploma Program (Undergraduate) (Overview)

Diploma Program (Undergraduate)

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

5.12 Diploma in Collegial Studies (Overview)

Diploma in Collegial Studies

- [section 7.3: Farm Management and Technology Program](#)

5.13 Environmental Sciences Programs (Overview)

5.13.1 Bieler School of Environment

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

5.13.2 Environmental Programs on the Macdonald Campus

A number of integrated environmental science programs are offered on the Macdonald campus, particularly within the B.Sc.(Ag.Env.Sc.) and B.Eng.(Bioresource) degrees. The objective of these interdepartmental programs is to provide a well-rounded training in a specific interdisciplinary subject as well as a basis for managing natural resources. For a complete list of the programs, see [section 5: Overview of Programs Offered](#).

5.14 Graduate Programs

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

- [Animal Science](#)
- [Bioresource Engineering](#)
- [Food Science and Agricultural Chemistry](#)
- [School of Human Nutrition](#)

- *Natural Resource Sciences*
- *Institute of Parasitology*
- *Plant Science*

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

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

Further information including full program lists is offered in the Faculty of Agricultural and Environmental Sciences *Graduate and Postdoctoral Studies section*, and details reg

Required Courses - Fall (14.5 credits)

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

Required Courses - Winter (12.5 credits)

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

Elective - Winter (3 credits)**B.Sc. (Ag. & Env. Sci.) - Agricultural Economics Major - Freshman Program (30 credits)**

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

Note: If you are not certain that you have adequate math and/or physics skills to commence the Freshman year you may wish to take preparatory courses prior to the normal Fall semester. You are encouraged to discuss your potential need with your academic adviser. Mathematical skill level will be determined

Advising Notes:

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

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

6.1.2 Bachelor of Engineering (Bioresource) (B.Eng.(Bioresource)) - Freshman Program (30 credits)

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

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

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

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

Required Courses - Fall (14.5 credits)

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

Required Courses - Winter (15.5 credits)

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

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

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

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

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

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

Required Courses - Fall (14.5 credits)

| | | |
|----------|-----|-----------------|
| AEBI 120 | (3) | General Biology |
|----------|-----|-----------------|

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

Required Courses - Winter (12.5 credits)

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

Elective - Winter (3 credits)

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

The B.Sc.(Nutr.Sc.) Freshman Program is 6.703 Tm(.j/r(gn 0 to pro221.949 580.554.8m(WSc.) Freshvide ttr)rTj1 0 sritionaePh)aionaprer

| | | |
|----------|------|------------------------|
| 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 |
| | (.5) | Freshman Seminar 2 |

Complementary Courses (6 credits)

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

Statistics

Written/Oral Communication

Specialization (24 credits)

Specializations designed to be taken with the Agricultural Economics Major:

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

- Agribusiness (24 credits)

- Environmental Economics (24 credits)

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

Honours Courses

Students choose either Plan A or Plan B.

Honours Plan A

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

| | | |
|----------|-----|----------------------------|
| FAES 401 | (6) | Honours Research Project 1 |
| | | Honours Research Project 2 |

| | | |
|----------|-----|---------------------------------|
| AEBI 210 | (3) | Organisms 1 |
| AEMA 310 | (3) | Statistical Methods 1 |
| AGEC 200 | (3) | Principles of Microeconomics |
| AGEC 231 | (3) | Economic Systems of Agriculture |
| | (3) | Agro-Ecosystems Field Course |

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

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

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

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

Program Prerequisites

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

Required Courses (36 credits)

| | | |
|----------|-----|---------------------------------|
| AEBI 210 | (3) | Organisms 1 |
| AEMA 310 | (3) | Statistical Methods 1 |
| AGEC 200 | (3) | Principles of Microeconomics |
| AGEC 231 | (3) | Economic Systems of Agriculture |
| AGRI 215 | (3) | Agro-Ecosystems Field Course |
| ANSC 250 | (3) | Principles of Animal Science |

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Honours Plan B

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

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

Specialization

Choose at least one specialization of 18-24 credits.

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

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

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

Electives

To meet the minimum credit requirement for the degree.

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

The Environmental Biology Major is about the biology, diversity, and ecology of a broad range of organisms, from plant and vertebrate animals to insects, fungi, and microbes.

Required Courses (36 credits)

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

Complementary Courses (18 credits)

6 credits from the following:

| | | |
|----------|-----|-------------------------------------|
| ENTO 330 | (3) | Insect Biology |
| ENVB 301 | (3) | Meteorology |
| ENVB 313 | (3) | Phylogeny and Biogeography |
| ENVB 437 | (3) | Assessing Environmental Impact |
| ENVB 497 | (3) | Research Project 1 |
| ENVB 498 | (3) | Research Project 2 |
| ENVB 529 | (3) | GIS for Natural Resource Management |
| FAES 300 | (3) | Internship 2 |
| MICR 331 | (3) | Microbial Ecology |
| PLNT 304 | (3) | Biology of Fungi |
| PLNT 358 | (3) | Flowering Plant Diversity |
| PLNT 460 | (3) | Plant Ecology |
| SOIL 300 | (3) | Geosystems |
| WILD 302 | (3) | Fish Ecology |
| WILD 307 | (3) | Natural History of Vertebrates |
| WOOD 441 | (3) | Integrated Forest Management |

Honours Courses

12 credits of Honours Plan A or Plan B:

Honours Plan A

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

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

OR

Honours Plan B

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

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

Specialization

At least one specialization of 18-24 credits.

Specializations designed to be taken with the Environmental Biology Major:

- Applied Ecology
- Plant Biology
- Wildlife Biology

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

Electives

To meet the minimum credit requirement for the degree.

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

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

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

Program Prerequisites

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

Required Courses (33 credits)

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

Specialization (24 credits)

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

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

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

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

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

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

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

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

Program Prerequisites

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

Required Courses (33 credits)

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

| | | |
|----------|-----|----------------------|
| NUTR 207 | (3) | Nutrition and Health |
| NUTR 341 | (3) | Global Food Security |

Complementary Courses (21 credits)

9 credits from the following:

| | | |
|----------|-----|---|
| AGRI 215 | (3) | Agro-Ecosystems Field Course |
| AGRI 340 | (3) | Principles of Ecological Agriculture |
| AGRI 499 | (3) | Agricultural Development Internship |
| ANSC 420 | (3) | Animal Biotechnology |
| BREE 217 | (3) | Hydrology and Water Resources |
| FDSC 310 | (3) | Post Harvest Fruit and Vegetable Technology |
| | (3) | Environment and Health |

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

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

Required Courses (33 credits)

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

| | | |
|----------|-----|-------------|
| AEBI 210 | (3) | Organisms 1 |
| AEBI 211 | (3) | Organisms 2 |
| | | Ev |

| | | |
|----------|-----|---------------------|
| PLNT 426 | (3) | Plant Ecophysiology |
| PLNT 435 | (3) | Plant Breeding |

Specialization

At least one specialization of 18-24 credits from:

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

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

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

Electives

To meet the minimum credit requirement for the degree.

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

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

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

A brief description of the Honours project activities involv

Complementary Courses (9 credits)

9 credits of the complementary courses selected from:

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

Specialization

At least one specialization of 18-24 credits from:

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

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

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

Electives

To meet the minimum credit requirement for the degree.

6.2.2 Specialisations

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

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

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

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

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

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

Required Courses (12 credits)

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

Complementary Courses (12 credits)

9 credits chosen from the following list:

| | | |
|----------|-----|--|
| ACCT 361 | (3) | Management Accounting |
| AGRI 310 | (3) | Internship in Agriculture/Environment |
| BUSA 364 | (3) | Business Law 1 |
| MGCR 222 | (3) | Introduction to Organizational Behaviour |
| MGCR 331 | (3) | Information Systems |
| MGCR 341 | (3) | Introduction to Finance |
| MGCR 352 | (3) | Principles of Marketing |
| MGCR 382 | (3) | International Business |
| ORGB 321 | (3) | Leadership |

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

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

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

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

Required Courses (15 credits)

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

Complementary Courses (9 credits)

9 credits selected from:

| | | |
|----------|-----|---------------------|
| ANSC 234 | (3) | Biochemistry 2 |
| ANSC 251 | (3) | Comparative Anatomy |

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

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

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

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

Required Courses (18 credits)

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

Complementary Courses (6 credits)

6 credits of complementary courses selected from:

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

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

This specialization will be of interest to students who wish to study the improved efficiency of livestock production at the national and international levels. Students are exposed to animal nutrition, physiology, and breeding in a context that respects environmental concerns and animal-welfare issues. When taken in conjunction with the Major Agro-Environmental Sciences and the specialization in Professional Agriculture, it conforms with the eligibility requirements of the Ordre des agronomes du Québec.

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

Required Courses (24 credits)

| | | |
|----------|-----|-------------------------------|
| ANSC 234 | (3) | Biochemistry 2 |
| ANSC 301 | (3) | Principles of Animal Breeding |
| ANSC 312 | (3) | Animal Health and Disease |

| | | |
|----------|-----|--|
| ANSC 323 | (3) | Mammalian Physiology |
| ANSC 324 | (3) | Developmental Biology and Reproduction |
| ANSC 433 | (3) | Animal Nutrition and Metabolism |
| ANSC 451 | (3) | Dairy and Beef Production Management |
| ANSC 458 | (3) | Swine and Poultry Production |

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

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

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

Required Courses (12 credits)

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

Complementary Courses (12 credits)

12 credits selected from the following:

| | | |
|----------|-----|--------------------------------------|
| AGRI 340 | (3) | Principles of Ecological Agriculture |
| AGRI 435 | (3) | Soil and Water Quality Management |
| BREE 327 | (3) | Bio-Environmental Engineering |
| ENVB 301 | (3) | Meteorology |
| ENVB 500 | (3) | Advanced Topics in Ecotoxicology |
| ENVB 506 | (3) | Quantitative Methods: Ecology |
| MICR 331 | (3) | Microbial Ecology |
| MICR 450 | (3) | Environmental Microbiology |
| PLNT 304 | (3) | Biology of Fungi |
| PLNT 426 | (3) | Plant Ecophysiology |
| PLNT 460 | (3) | Plant Ecology |
| SOIL 300 | (3) | Geosystems |
| SOIL 326 | (3) | Soils in a Changing Environment |
| SOIL 535 | (3) | Soil Ecology |
| WILD 302 | (3) | Fish Ecology |
| WILD 307 | (3) | Natural History of Vertebrates |
| WILD 350 | (3) | Mammalogy |
| WILD 420 | (3) | Ornithology |

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

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

with the eligibility requirements of the Ordre des agronomes du Québec. It is suitable for students wishing to farm and do extension and government work, and those intending to pursue postgraduate work in this field.

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

Required Courses (12 credits)

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

Complementary Courses (12 credits)

Minimum of 6 agronomic credits from:

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

Other complementary courses:

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

Bachelor of Science (Agricultural and Envir

| | | |
|----------|-----|-------------------------------------|
| BREE 327 | (3) | Bio-Environmental Engineering |
| ECON 225 | (3) | Economics of the Environment |
| ECON 326 | (3) | Ecological Economics |
| ECON 405 | (3) | Natural Resource Economics |
| ENVB 222 | (3) | St. Lawrence Ecosystems |
| ENVB 301 | (3) | Meteorology |
| ENVB 529 | (3) | GIS for Natural Resource Management |
| ENVR 203 | (3) | Knowledge, Ethics and Environment |
| MGPO 440 | (3) | Strategies for Sustainability |
| MICR 331 | (3) | Microbial Ecology |
| NRSC 333 | (3) | Pollution and Bioremediation |
| WILD 421 | (3) | Wildlife Conservation |

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

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

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

Required Courses (6 credits)

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

Complementary Courses (18 credits)

Students select either Option A or Option B.

Option A

18 credits from the following:

| | | |
|----------|-----|---|
| AGEC 333 | (3) | Resource Economics |
| | | Agriculture, Food and Resource Po830, sus |

15 credits from any of the McGill Field Study Semesters

African Field Study Semester

Barbados Field Study Semester

Barbados Interdisciplinary Tropical Studies Field Semester

Panama Field Study Semester

3 credits from the list in Option A

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

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

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

Complementary Courses (24 credits)

24 credits selected from the following list:

| | | |
|----------|-----|--|
| ANSC 312 | (3) | Animal Health and Disease |
| ANSC 323 | (3) | Mammalian Physiology |
| ANSC 324 | (3) | Developmental Biology and Reproduction |
| ANSC 326 | (3) | Fundamentals of Population Genetics |
| ANSC 350 | (3) | Food-Borne Pathogens |
| ANSC 420 | (3) | Animal Biotechnology |
| ANSC 424 | (3) | Metabolic Endocrinology |
| ANSC 433 | (3) | Animal Nutrition and Metabolism |

Herbs, F

under the guidance of a member of the Plant Science Department as part of their studies. Graduates with the specialization may continue in post-graduate study or work in the fields of botany, mycology, molecular biology, ecology, conservation, or environmental science.

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

Required Courses (9 credits)

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

Complementary Courses (15 credits)

15 credits of complementary courses selected from:

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

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

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

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

Required Courses (18 credits)

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

Complementary Courses (6 credits)

6 credits of complementary courses selected from:

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

Complementary Courses (8 credits)

Note: A 2-credit course may replace one of the complementary courses with permission of the advisor.

| | | |
|----------|-----|--------------------------------|
| BIOL 307 | (3) | Behavioural Ecology |
| BIOL 427 | (3) | Herpetology |
| ENVB 437 | (3) | Assessing Environmental Impact |
| ENVB 506 | (3) | Quantitative Methods: Ecology |
| PARA 424 | (3) | Fundamental Parasitology |
| PLNT 358 | (3) | Flowering Plant Diversity |
| WILD 302 | (3) | Fish Ecology |
| WILD 421 | (3) | Wildlife Conservation |
| WILD 475 | (3) | Desert Ecology |

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

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

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

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

Required Courses (62 credits)

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

| | | |
|----------|-----|--|
| FACC 250 | (0) | Responsibilities of the Professional Engineer |
| FACC 300 | (3) | Engineering Economy |
| FACC 400 | (1) | Engineering Professional Practice Design Graphics |

| | | |
|----------|-----|-------------------------------------|
| BREE 217 | (3) | Hydrology and Water Resources |
| BREE 314 | (3) | Agri-Food Buildings |
| BREE 322 | (3) | Organic Waste Management |
| BREE 325 | (3) | Food Process Engineering |
| BREE 329 | (3) | Precision Agriculture |
| BREE 403 | (3) | Biological Material Properties |
| BREE 412 | (3) | Machinery Systems Engineering |
| BREE 416 | (3) | Engineering for Land Development |
| BREE 419 | (3) | Structural Design |
| BREE 497 | (3) | Bioresource Engineering Project |
| BREE 501 | (3) | Simulation and Modelling |
| BREE 502 | (3) | Drainage/Irrigation Engineering |
| BREE 509 | (3) | Hydrologic Systems and Modelling. |
| BREE 510 | (3) | Watershed Systems Management |
| BREE 515 | (3) | Soil Hydrologic Modelling |
| BREE 518 | (3) | Ecological Engineering |
| BREE 519 | (3) | Advanced Food Engineering |
| BREE 520 | (3) | Food, Fibre and Fuel Elements |
| BREE 522 | (3) | Bio-Based Polymers |
| BREE 529 | (3) | GIS for Natural Resource Management |
| BREE 530 | (3) | Fermentation Engineering |
| BREE 531 | (3) | Post-Harvest Drying |
| BREE 532 | (3) | Post-Harvest Storage |
| BREE 533 | (3) | Water Quality Management |
| BREE 535 | (3) | Food Safety Engineering |

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

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

Required Courses (62 credits)

| | | |
|----------|-----|-----------------------------------|
| AEMA 202 | (3) | Intermediate Calculus |
| AEMA 305 | (3) | Differential Equations |
| BREE 205 | (3) | Engineering Design 1 |
| BREE 210 | (3) | Mechanical Analysis and Design |
| BREE 216 | (3) | Bioresource Engineering Materials |
| BREE 252 | (3) | Computing for Engineers |
| BREE 301 | (3) | Biothermodynamics |
| BREE 305 | (3) | Fluid Mechanics |
| BREE 312 | (3) | Electric Circuits and Machines |
| BREE 319 | (3) | Engineering Mathematics |
| BREE 327 | (3) | Bio-Environmental Engineering |

| | | |
|----------|-----|---|
| BREE 341 | (3) | Mechanics of Materials |
| BREE 415 | (3) | Design of Machines and Structural Elements |
| BREE 420 | (3) | Engineering for Sustainability |
| BREE 451 | (1) | Undergraduate Seminar 1 - Oral Presentation |
| BREE 452 | (1) | Undergraduate Seminar 2 Poster Presentation |
| BREE 453 | (1) | Undergraduate Seminar 3 - Scientific Writing |
| BREE 485 | (1) | Senior Undergraduate Seminar 1 |
| BREE 490 | (3) | Engineering Design 2 |
| BREE 495 | (3) | Engineering Design 3 |
| BREE 504 | (3) | Instrumentation and Control |
| FACC 250 | (0) | Responsibilities of the Professional Engineer |
| FACC 300 | (3) | Engineering Economy |
| FA | (1) | Engineering Professional Practice |

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

Set B - Natural Sciences and Mathematics

3 credits chosen from the list below:

| | | |
|----------|-----|----------------------------------|
| AEBI 210 | (3) | Organisms 1 |
| AEBI 211 | (3) | Organisms 2 |
| ENVB 210 | (3) | The Biophysical Environment |
| ENVB 305 | (3) | Population and Community Ecology |
| ENVB 315 | (0) | |
| LSCI 202 | (3) | Molecular Cell Biology |
| LSCI 211 | (3) | Biochemistry 1 |
| LSCI 230 | (3) | Introductory Microbiology |
| MICR 331 | (3) | Microbial Ecology |
| PLNT 300 | (3) | Cropping Systems |

Plus 6 credits chosen in consultation with the Academic Adviser.

Set C - Social Sciences

Minimum of 3 credits from the following list:

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

Note: ENVR courses have limited enrolment.

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

Set D - Engineering

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

| | | |
|----------|-----|----------------------------------|
| BREE 214 | (3) | Geomatics |
| BREE 217 | (3) | Hydrology and Water Resources |
| BREE 314 | (3) | Agri-Food Buildings |
| BREE 322 | (3) | Organic Waste Management |
| BREE 325 | (3) | Food Process Engineering |
| BREE 329 | (3) | Precision Agriculture |
| BREE 403 | (3) | Biological Material Properties |
| BREE 412 | (3) | Machinery Systems Engineering |
| BREE 416 | (3) | Engineering for Land Development |
| BREE 419 | (3) | Structural Design |
| BREE 497 | (3) | Bioresource Engineering Project |
| BREE 501 | (3) | Simulation and Modelling |
| BREE 502 | (3) | Drainage/Irrigation Engineering |

| | | |
|----------|-----|-------------------------------------|
| BREE 509 | (3) | Hydrologic Systems and Modelling. |
| BREE 510 | (3) | Watershed Systems Management |
| BREE 515 | (3) | Soil Hydrologic Modelling |
| BREE 518 | (3) | Ecological Engineering |
| BREE 519 | (3) | Advanced Food Engineering |
| BREE 520 | (3) | Food, Fibre and Fuel Elements |
| BREE 522 | (3) | Bio-Based Polymers |
| BREE 529 | (3) | GIS for Natural Resource Management |
| BREE 530 | (3) | Fermentation Engineering |
| BREE 531 | (3) | Post-Harvest Drying |
| BREE 532 | (3) | Post-Harvest Storage |
| BREE 533 | (3) | Water Quality Management |
| BREE 535 | (3) | Food Safety Engineering |

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

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

Required Courses (65 credits)

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

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

Complementary Courses (48 credits)

48 credits of the complementary courses selected as follows:

Set A

3 credits from the following:

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

3 credits from the following:

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

Set B - Natural Sciences

Group 1 - Biology

6 credits from the following list:

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

Group 2 - Agricultural Sciences

6 credits from the following list:

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

Set C - Social Sciences

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

6.3.4.1 Minor in Environmental Engineering

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

6.3.4.2 Barbados Field Study Semester

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

6.3.4.3 Internship Opportunities

For more information, see [section 5.1: Internship Opportunities](#).

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

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

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

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

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

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

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

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

Required Courses (51 credits)

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

| | | |
|----------|-----|-------------------------------|
| AEMA 310 | (3) | Statistical Methods 1 |
| AGRI 510 | (3) | Professional Practice |
| BREE 324 | (3) | Elements of Food Engineering |
| FDSC 200 | (3) | Introduction to Food Science |
| FDSC 213 | (3) | Analytical Chemistry 1 |
| FDSC 251 | (3) | Food Chemistry 1 |
| FDSC 300 | (3) | Principles of Food Analysis 1 |

Post Harvest Fruit and VeFvh.2.54hq3 Tm((3))Tj1 0 0 1 701 0 0 4 gEing

Additional Required Courses - Food Science Option (21 credits)

Physical Chemistry

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

Required Courses (54 credits)

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

| | | |
|----------|-----|------------------------------|
| AEMA 310 | (3) | Statistical Methods 1 |
| AGRI 510 | (3) | Professional Practice |
| | (3) | Elements of Food Engineering |

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

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

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

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

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

Required Courses (80 credits)

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

Complementary Courses (30 credits)

Complementary courses are selected as follows:

At least 9 credits from the following:

| | | |
|----------|-----|---|
| AGEC 200 | (3) | Principles of Microeconomics |
| AGEC 201 | (3) | Principles of Macroeconomics |
| AGEC 330 | (3) | Agriculture and Food Markets |
| AGEC 430 | (3) | Agriculture, Food and Resource Policy |
| AGEC 442 | (3) | Economics of International Agricultural Development |
| AGEC 450 | (3) | Agribusiness Management |
| NUTR 342 | (3) | Applied Human Resources |

At least 9 credits from the following:

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

12 credits from the following:

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

Elective Courses (12 credits)

Electives are seNUT16(Eleneo)

fundamental knowledge in both disciplines to promote the development of healthy food products for human consumption. The overall program is structured and closely integrated to satisfy the academic requirements of both degrees as well as the professional training or exposure to industry.

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

Required Courses (80 credits)

| | | |
|--|-----|-----------------------|
| AEMA 310 | (3) | Statistical Methods 1 |
| "t4 0 0 1 103.549 704.4sf b.253 2 663.581 Tm((3))Tj) | | |

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

Complementary Courses (30 credits)

Complementary courses are selected as follows:

At least 9 credits from the following:

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

At least 9 credits from the following:

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

12 credits from the following:

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

Elective Courses (12 credits)

Electives are selected in consultation with an academic adviser.

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

6.4.5.1 Certificate in Food Science

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

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

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

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

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

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

Required Courses (112 credits)

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

| | | |
|-----------|-----|--|
| AEMA 310 | (3) | Statistical Methods 1 |
| ANSC 234 | (3) | Biochemistry 2 |
| ANSC 323 | (3) | Mammalian Physiology |
| ANSC 424 | (3) | Metabolic Endocrinology |
| IPEA 500 | (0) | Roles in Interprofessional Teams |
| IPEA 501 | (0) | Communication in Interprofessional Teams |
| IPEA 502 | (0) | Patient-Centred Care in Action |
| IPEA 503 | (0) | Managing Interprofessional Conflict |
| LSCI 211 | (3) | Biochemistry 1 |
| LSCI 230 | (3) | Introductory Microbiology |
| NUTR 207 | (3) | Nutrition and Health |
| NUTR 208* | (2) | Professional Practice Stage 1A |
| NUTR 209* | (2) | Professional Practice Stage 1B |
| NUTR 214 | (4) | Food Fundamentals |
| NUTR 217 | (4) | Application: Food Fundamentals |
| NUTR 307 | (3) | Metabolism and Human Nutrition |
| NUTR 310* | (2) | Professional Practice Stage 2A |
| NUTR 311* | (5) | Professional Practice Stage 2B |
| NUTR 322 | (3) | Applied Sciences Communication |
| NUTR 337 | (3) | Nutrition Through Life |
| NUTR 341 | (3) | Global Food Security |
| NUTR 342 | (3) | Applied Human Resources |
| NUTR 343 | (3) | Financial Management and Accounting |
| NUTR 344 | (4) | Clinical Nutrition 1 |
| NUTR 345 | (3) | Food Service Systems Management |
| NUTR 346 | (3) | Applied Food Service Management |
| NUTR 408* | (1) | Professional Practice Stage 3A |
| NUTR 409* | (9) | Professional Practice Stage 3B |
| NUTR 438 | (3) | Interviewing and Counselling |
| NUTR 450 | (3) | Research Methods: Human Nutrition |
| NUTR 505 | (3) | Public Health Nutrition |
| NUTR 508* | (7) | Professional Practice Stage 4A |
| NUTR 509* | (7) | Professional Practice Stage 4B |
| NUTR 511 | (3) | Nutrition and Behaviour |
| NUTR 545 | (4) | Clinical Nutrition 2 |
| NUTR 546 | (4) | Clinical Nutrition 3 |

Elective Courses (3 credits)

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

Electiv

| | | |
|----------|-----|-----------------------------------|
| NUTR 344 | (4) | Clinical Nutrition 1 |
| NUTR 401 | (1) | Emerging Issues in Nutrition |
| NUTR 450 | (3) | Research Methods: Human Nutrition |
| NUTR 512 | (3) | Herbs, Foods and Phytochemicals |

Complementary Courses (12 credits)

12 credits of complementary courses are selected as follows:

Common Complementary Courses

6 credits from the follo

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

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

Please refer to "Faculty Information and Re

Introduction to Food Science

| | | |
|----------|-----|--|
| NUTR 551 | (3) | Analysis of Nutrition Data |
| PARA 424 | (3) | Fundamental Parasitology |
| PATH 300 | (3) | Human Disease |
| PHAR 300 | (3) | Drug Action |
| PHAR 301 | (3) | Drugs and Disease |
| PHAR 303 | (3) | Principles of Toxicology |
| PHGY 311 | (3) | Channels, Synapses and Hormones |
| PHGY 312 | (3) | Respiratory, Renal, and Cardiovascular Physiology |
| PHGY 313 | (3) | Blood, Gastrointestinal, and Immune Systems Physiology |

Elective Courses (15 credits)

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

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

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

Required Courses (63 credits)

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

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

Complementary Courses (12 credits)

12 credits of complementary courses are selected as follows:

Common Complementary Courses

6 credits from the following:

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

This Major offers a core emphasis on the scientific fundamentals of nutrition and metabolism throughout the lifespan from the molecular to the organismal level. This concentration in nutritional biochemistry links nutrigenomics, nutrigenetics, and biotechnology with human health, re

| | | |
|----------|-----|----------------------------|
| NUTR 503 | (3) | Nutrition and Exercise |
| NUTR 511 | (3) | Nutrition and Behaviour |
| NUTR 545 | (4) | Clinical Nutrition 2 |
| NUTR 546 | (4) | Clinical Nutrition 3 |
| NUTR 551 | (3) | Analysis of Nutrition Data |
| PARA 438 | (3) | Immunology |

At least 9 credits from the following courses:

| | | |
|----------|-----|---|
| ANAT 262 | (3) | Introductory Molecular and Cell Biology |
| ANSC 324 | (3) | Developmental Biology and Reproduction |
| ANSC 400 | (3) | Eukaryotic Cells and Viruses |
| ANSC 420 | (3) | Animal Biotechnology |
| ANSC 551 | (3) | Carbohydrate and Lipid Metabolism |
| ANSC 552 | (3) | Protein Metabolism and Nutrition |
| BINF 301 | (3) | Introduction to Bioinformatics |

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

Complementary Courses (12 credits)

12 credits of complementary courses are selected as follows:

Common Complementary Courses

6 credits from the following:

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

6 credits from:

| | | |
|----------|-----|------------------------|
| ANAT 214 | (3) | Systemic Human Anatomy |
| EDKP 261 | (3) | Motor Development |

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

Elective Courses (15 credits)

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

6.5.8 Bachelor of Science (Nutritional Sciences) – Related Programs

6.5.8.1 Minor in Human Nutrition

Detailed information on this Minor can be found under [section 6.6.10: Bachelor of Science \(Agricultural and Environmental Sciences\) \(B.Sc.\(Ag.Env.Sc.\)\) - Minor Human Nutrition \(24 credits\)](#) in this publication.

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

Detailed information on this concurrent program can be found under [section 6.4.4.1: Concurrent Bachelor of Science in Food Science \(B.Sc.\(F.Sc.\)\) and Bachelor of Science Nutritional Sciences \(B.Sc.\(Nutr.Sc.\)\) - Food Science/Nutritional Science Major \(Concurrent\) \(122 credits\)](#) in this publication.

6.6 Minor Programs

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

For a full list of minors offered by the Faculty of Agricultural and Environmental Sciences, refer to [section 5.9: Minor Programs \(Overview\)](#). For registration information, see [section 4.6.8.1: Procedures for Minor Programs](#).

6.6.1 Minor in Environment (Bieler School of Environment)

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

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

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

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

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

Minimum requirements: U2 or above; minimum 3.0 CGPA.

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

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

Students are advised to consult their major program adviser and the Academic Adviser of the Minor in their first year. At the time of registration for their penultimate year, students must declare their intent to obtain a Minor Agricultural Production. With the agreement of their major program adviser, they must submit their program of courses already taken, and to be taken in their final year

| | | |
|----------|-----|--|
| ANSC 323 | (3) | Mammalian Physiology |
| ANSC 324 | (3) | Developmental Biology and Reproduction |
| ANSC 420 | (3) | Animal Biotechnology |
| PARA 438 | (3) | Immunology |

Complementary Courses (9 credits)

9 credits selected from:

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

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

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

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

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

Required Courses (18 credits)

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

Complementary Courses (6 credits)

6 credits selected from the following list:

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

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

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

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

To obtain a Minor in Applied Ecology, students must:

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

Required Courses (12 credits)

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

Complementary Courses (12 credits)

12 credits of complementary courses selected as follows:

| | | |
|----------|-----|--------------------------------------|
| AGRI 340 | (3) | Principles of Ecological Agriculture |
| AGRI 435 | (3) | Soil and Water Quality Management |
| ENVB 301 | (3) | Meteorology |
| ENVB 506 | (3) | Quantitative Methods: Ecology |
| MICR 331 | (3) | Microbial Ecology |
| MICR 450 | (3) | Environmental Microbiology |
| PLNT 304 | (3) | Biology of Fungi |
| PLNT 426 | (3) | Plant Ecophysiology |
| PLNT 460 | (3) | Plant Ecology |
| SOIL 300 | (3) | Geosystems |
| SOIL 326 | (3) | Soils in a Changing Environment |
| WILD 302 | (3) | Fish Ecology |
| WILD 307 | (3) | Natural History of Vertebrates |
| WILD 350 | (3) | Mammalogy |
| WILD 420 | (3) | Ornithology |

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

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

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

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

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

General Regulations

To obtain a Minor in Ecological Agriculture, students must:

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

Required Courses (12 credits)

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

Complementary Courses (12 credits)

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

6.6.9 Minor in Environmental Engineering

The Minor program consists of 21 credits in courses that are environment related. By means of a judicious choice of complementary courses, Bioresource Engineering students may obtain this Minor with a minimum of 12 additional credits.

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

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

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

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

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

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

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

Note:

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

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

Required Courses (6 credits)

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

Complementary Courses (18 credits)

18 credits are selected as follows:

3 credits in Biochemistry, one of:

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

3 credits in Physiology, one of:

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

3 credits in Nutrition, one of:

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

9 credits from:

| | | |
|----------|-----|---|
| ANSC 551 | (3) | Carbohydrate and Lipid Metabolism |
| ANSC 552 | (3) | Protein Metabolism and Nutrition |
| MIMM 314 | (3) | Intermediate Immunology |
| NUTR 344 | (4) | Clinical Nutrition 1 |
| NUTR 430 | (3) | Directed Studies: Dietetics and Nutrition 1 |
| NUTR 501 | (3) | Nutrition in Developing Countries |
| NUTR 503 | (3) | Nutrition and Exercise |
| NUTR 505 | (3) | Public Health Nutrition |
| NUTR 512 | (3) | Herbs, Foods and Phytochemicals |
| NUTR 551 | (3) | Analysis of Nutrition Data |

| | | |
|----------|-----|---------------|
| PARA 438 | (3) | Immunology |
| PATH 300 | (3) | Human Disease |

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

Students enter this minor to acquire a global and applied understanding of agriculture as a fundamental tool to help rural development, alleviate poverty and reach food security, especially in the developing world. This program provides students with a combination of coursework at McGill together with a hands-on experience in a developing country

6.7 Post-Baccalaureate Certificate Programs

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

6.7.1 Certificate (Cert.) Ecological Agriculture (30 credits)

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

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

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

General Regulations

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

Notes:

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

Required Courses (12 credits)

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

Complementary Courses (18 credits)

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

| | | |
|----------|-----|--|
| AGRI 310 | (3) | Internship in Agriculture/Environment |
| AGRI 411 | (3) | Global Issues on Development, Food and Agriculture |
| AGRI 435 | (3) | Soil and Water Quality Management |
| ANSC 312 | (3) | Animal Health and Disease |
| ENTO 352 | (3) | Biocontrol of Pest Insects |
| ENVB 305 | (3) | Population and Community Ecology |
| ENVB 415 | (3) | Ecosystem Management |
| MICR 331 | (3) | Microbial Ecology |
| NUTR 341 | (3) | Global Food Security |
| PARA 424 | (3) | Fundamental Parasitology |
| PLNT 302 | (3) | Forage Crops and Pastures |
| PLNT 307 | (3) | Agroecology of Vegetables and Fruits |
| PLNT 434 | (3) | Weed Biology and Control |
| PLNT 460 | (3) | Plant Ecology |
| SOIL 326 | (3) | Soils in a Changing Environment |
| WOOD 441 | (3) | Integrated Forest Management |

6.7.2 Certificate (Cert.) Food Science (30 credits)

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

Required Course (3 credits)

| | | |
|----------|-----|------------------------------|
| FDSC 200 | (3) | Introduction to Food Science |
|----------|-----|------------------------------|

Complementary Courses (27 credits)

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

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

7.1.2 About the Department of Animal Science

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

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

7.2.2 About the Department of Bioresource Engineering

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

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

For more information on programs associated with this department, see [section 6.3: B.Eng Bioresource](#)

Sainte-Anne-de-Bellevue QC H9X 3V9
Telephone: 514-398-7814
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Email: fmt.macdonald@mcgill.ca
Website: mcgill.ca/fmt

7.3.2 About the Farm Management and Technology Program

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

7.3.3 Diploma of College Studies — Farm Management Technology

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

The educational goals of the program are:

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

Program Overview

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

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

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

Program Outline

Fall 1

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

Winter 1

| | | |
|----------|--------|--|
| FMT4 007 | (2) | Health and Safety (152-VSG-MC) |
| FMT4 008 | (2.33) | Animal Genetics and Nutrition (152-VSH-MC) |
| FMT4 009 | (2) | Soil Fertility (152-VSJ-MC) |
| FMT4 010 | (1.33) | Winter Stage (152-VSK-MC) |
| FMT4 011 | (2) | Farm Accounting (152-VSL-MC) |

| | | |
|----------|--------|------------------------------------|
| FMT4 012 | (1.67) | Machinery Maintenance (152-VSM-MC) |
| FMT4 077 | (2.67) | Introduction to College English |

Summer 1

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

Fall 2

Two courses selected from the Elective Production course list below.

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

Winter 2

Two courses selected from the Elective Production course list below.

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

Summer 2

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

Fall 3

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

Winter 3

| | | |
|----------|--------|--|
| FMT4 023 | (1.33) | Building Management (152-VSZ-MC) |
| FMT4 024 | (1.67) | Farm Building Development (152-VTA-MC) |
| FMT4 025 | (2.33) | Enterprise Management 3 (152-VTB-MC) |
| FMT4 026 | (1.67) | Human Resources (152-VTC-MC) |

Precision

7.3.5 Academic Rules and Information – FMT

The Farm Management and Technology program follows the rules and regulations of McGill University as well as from the *Ministère de l'Éducation et de l'Enseignement supérieur* (MEES) for the collegial level.

7.3.5.1 Entrance Requirements – FMT

- 1.** Students should have a good practical knowledge of farming under eastern Canadian conditions. One year of e

7.3.5.5 Student Rights and Responsibilities

The regulations and policies governing student rights and responsibilities at McGill University are published jointly by the Dean of Students' Office and the Secretariat and can be found at mcgill.ca/secretariat/policies-and-regulations.

7.3.5.6 Institutional Policy on the Evaluation of Student Achievement – FMT

The policy has the following objectives:

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

Fax: 514-398-7990
 Email: info.macdonald@mcgill.ca
 Website: mcgill.ca/foodscience

7.4.2 About the Department of Food Science

Food Science is a multidisciplinary field involving chemistry, biochemistry, nutrition, microbiology, and processing that gives students the scientific knowledge to solve real problems associated with the many facets of the food system. Food Science is still a relatively new and growing discipline, brought about mainly as a response to the social changes taking place in North America and other parts of the developed world. The current trend toward merger between **food** and **pharmaceutical industries** to produce the next generation of new food products, such as functional foods and nutraceuticals, is the biggest challenge facing the discipline of Food Science today. You can be part of it.

The programs offered are:

- B.Sc. Food Science (Food Chemistry or Food Science option)
- Concurrent degree, which includes B.Sc. Food Science/B.Sc. Nutritional Sciences
- Post-Baccalaureate Certificate in Food Science

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

7.4.3 Food Science and Agricultural Chemistry Faculty

Chair

Varoujan A. Yaylayan

Graduate Program Director

Ashraf Ismail

Emeritus Professors

Inteaz Alli; Frederik R. van de Voort.

Professors

Hosahalli S. Ramaswamy; Benjamin K. Simpson; Varoujan A. Yaylayan.

Associate Professors

Stephane Bayen; Saji George; Ashraf A. Ismail; Salwa Karboune; Xiaonan Lu.

Assistant Professor

Jennifer Ronholm; Yixiang Wang.

Adjunct Professors

Luis Garcia; Lawrence Goodridge; Jocelyn Pare; Ali Taherian.

Research/Academic Associates

Jacqueline Sedman.

7.5 School of Human Nutrition

7.5.1 Location

Macdonald Stewart Building
 McGill University, Macdonald Campus
 21,111 Lakeshore Road
 Sainte-Anne-de-Bellevue QC H9X 3V9
 Canada
 Telephone: 514-398-7773

Fax: 514-398-7739

Email: nutrition.dietetics@mcgill.ca

Website: mcgill.ca/nutrition

7.5.2 About the School of Human Nutrition

The health and well-being of individuals and populations in relation to food choices and metabolism prevails as the unifying theme of the programs in the School of Human Nutrition, a part of the McGill Univ

- Students with a French Baccalaureate or an International Baccalaureate who want to enter Dietetics must apply into the Nutrition program and apply to transfer after their first year.

Students from the following programs can apply directly into the Dietetics program:

- students with a CEGEP DEC
- students with a minimum of one year of university studies
- Mature students with **all** of the math and science prerequisites

Proof of English proficiency:

Some applicants to the School's programs may be asked to prove *English Proficiency* as part of the application process.

See the [Applying to Undergraduate Studies](#) website for information on applying to programs in the School of Human Nutrition.

Proof of French proficiency:

Applicants will be required to prove *proficiency in French*.

7.5.6.1 Quebec CEGEP Students

CEGEP applicants must have obtained, prior to the start of classes, a Diplôme d'études collégiales (DEC).

Prerequisites:

- Math NYA (00UN or 01Y1) **and** NYB (00UP or 01Y2)
- Biology NYA (00UK or 01Y5) **and** Biology II (00XU or 01YJ)
- Chemistry NYA (00UL or 01Y6) **and** Organic Chemistry (00XV or 01YH)
- Physics NYA (00UR or 01Y7) **and** NYB (00US or 01YF) **and** NYC (00UT 01YG)

Dietetics:

Applicants to this program are advised to have all prerequisite courses completed prior to entry. It may be possible to be admitted missing some of the prerequisites however this is a highly competitive program and students with all of the prerequisites will be given priority.* If you are admitted missing some prerequisites, you will be required to complete them in addition to your BSc.(Nutr.Sc.) program requirements. **** Please note that this will extend the length of your program by one year as without all prerequisite courses completed you will be unable to register for your first stage.** If at all possible, students should try to complete any missing prerequisite courses in the summer before starting at McGill.

** Students graduating with a DEC in "Sciences, lettres, et arts" (700.A0) are eligible for all programs. They will NOT be disadvantaged during the admission process if they did not complete all prerequisites. They will be required to complete any missing portion of prerequisites at McGill in addition to the B.Sc.(Nutr.Sc.) program requirements. Please note that if they are missing any of the prerequisites, this will extend their program by one year. See ** above.*

Nutrition:

Students may be accepted with a minimum of three prerequisite courses:

- Math NYA (00UK or 01Y5)

and two of the following:

- Biology NYA (00UK or 01Y5)
- Chemistry NYA (00UL or 01Y6)
- Physics NYA (00UR or 01Y7)

If admitted, any missing prerequisites will be added to their McGill program.

More information can be found on the [Applying to Undergraduate Studies](#) website.

7.5.6.2 Transfer Students

Students wishing to transfer from other universities and colleges are considered for admission on the basis of both their univ

Please note that math and science courses completed at other institutions that are not directly equivalent to the math and science courses in the B.Sc.(Nutr.Sc.) programs, can be used for admissions purposes, but cannot be used to grant exemptions. **If any of the math and science prerequisite courses completed are deemed not equivalent, they will have to be repeated at McGill.** Course equivalencies can be viewed on McGill's [course equivalency system](#).

More information can be found on the [Applying to Undergraduate Studies](#) website.

Dietetics:

Applicants to the Dietetics program are recommended to have all prerequisite math and science courses completed prior to entry. It may be possible to be

More information and all of the specific conditions for eligibility as a Mature student can be found on the [Applying to Undergraduate Studies](#) website.

7.5.7 Academic Information and Regulations

7.5.7.1 Academic Standing

For general information, see [section 4.6.5: Academic Standing](#).

Dietetics students please note:

- Undergraduate registration for all Professional Practice (Stage) courses is restricted to students in the Dietetics Major with a CGPA greater than or equal to 3.00. The CGPA requirement is firmly applied.
- Students in the Dietetics Major who have a CGPA below 3.0 for two consecutive years will not be permitted to continue in the program.

7.6 Department of Natural Resource Sciences

7.6.1 Location

Macdonald-Stewart Building
McGill University, Macdonald Campus
21,111 Lakeshore Road
Sainte-Anne-de-Bellevue QC H9X 3V9
Canada
Telephone: 514-398-7773
Fax: 514-398-7990
Email: info.macdonald@mcgill.ca
Website: mcgill.ca/nrs

7.6.2 About the Department of Natural Resource Sciences

As humans depend on a wide variety of ecosystem services, society is becoming increasingly aware of the need for sustainable management of natural resources. We require the natural world to provide us with necessities such as air, water, food, and energy, but also depend on ecosystems for services such as nutrient cycling, biodiversity, recreation, and the splendour of nature. Sustainable management of natural resources via governance of human activities requires an understanding of all of these elements.

The Department of Natural Resource Sciences is a multidisciplinary group with a wide range of interests, including wildlife and fish biology, entomology, agriculture, soil science, microbiology, genomics, meteorology, forest science, landscape ecology, agricultural and resource economics, and environmental policy. We are concerned with the populations and diversity of organisms within ecosystems; the flow of energy and nutrients through ecosystems; and processes that influence human behaviour toward ecosystem services and the environment. Our graduate programs in agricultural economics, entomology, microbiology, and renewable resources, allow students to gain disciplinary depth and interdisciplinary breadth.

Natural Resource Sciences plays a strong role in several undergraduate programs, from the inter-departmental **Majors** in:

- Environmental Biology;
- Life Sciences (Biological and Agricultural);
- Environment (Bieler School of Environment);
- Agro-Environmental Sciences; and
- Agricultural Economics;

to the **Specialisations** such as:

- Applied Ecology;
- Wildlife Biology;
- Microbiology and Molecular Biotechnology;
- Agribusiness;
- Environmental Economics; and
- Life Sciences (Multidisciplinary)

7.6.3 Natural Resource Sciences Faculty

Chair

Brian Driscoll

Graduate Program Director

Sébastien Faucher

Program Director - Agricultural Economics

Paul J. Thomassin

Emeritus Professors

David M. Bird; James W. Fyles; Edmund S. Idziak; Peter H. Schuepp; Robin K. Stewart.

Professors

Niladri Basu; Elena Bennett; Peter Brown; Christopher Buddle; Gordon Hickey; Murray Humphries; Paul J. Thomassin; Joann Whalen; Lyle G.

7.7.3 Parasitology Faculty

Director

Reza Salavati

Emeritus Professor

Timothy G. Geary

Professors

Roger Prichard; Reza Salavati; Marilyn Scott.

Associate Professors

Robin N. Beech; Elias Georges; Petra Rohrbach; Jianguo (Jeff) Xia.

Assistant Professors

Igor Cestari; Qian (Vivian) Liu; Thavy Long; Fernando Lopes.

7.8.3 Plant Science Faculty

Chair

Martina V. Stromvik

Associate Chair and Graduate Program Director

Jean-Benoit Charron

Associate Graduate Program Director

Valérie Gravel

Emeriti Professors

Deborah J. Buszard; Alan K. Watson.

Professors

Pierre Dutilleul; Anja Geitmann; Suha Jabaji; Ajjamada C. Kushalappa; Philippe Seguin; Donald L. Smith.

Associate Professors

Jacqueline C. Bede; Sylvie de Blois; Jean-Benoit Charron; Valérie Gravel; Jaswinder Singh; Martina V. Stromvik.

Assistant Professors

Mehran Dastmalchi; Valerio Hoyos-Villegas.

Faculty Lecturers

Caroline Begg; David Wees

Academic Associate

Frieda Beauregard

Adjunct Professors

Konstantinos Aliferis; Annick Bertrand; Antoine Page.

8 Instructional Staff

Instructional Staff

Adamchuk, Viacheslav I.; Adamowski, Jan; Agellon, Luis B.; Akbarzadeh Shafaroudi, Abdolhamid; Altamura, Fernando; Basu, Niladri; Bayen, Stephane; Bede, Jacqueline; Beech, Robin N.; Begg, Caroline; Bekele-Yitbarek, Alexander; Bennett, Elena; Bordignon, Vilceu; Brazeau, Anne-Sophie; Brown, Peter G.; Buddle, Christopher; Burgos, Sergio; Cardille, Jeffrey A.; Cestari, Igor; Charron, Jean-Benoit; Cherestes, Alice; Chevalier, Stephanie; Clark, Grant; Côté, Benoît; Cue, Roger I.; Dastmalchi, Mehran; Delormier, Treena; de Blois, Sylvie; Doidge, Mary; Driscoll, Brian T.; Duggavathi, Raj; Duhamel, Paul-Guy; Dumont, Marie-Josée; Dunphy, Gary B.; Dutilleul, Pierre R.; Elliott, Kyle H.; Enright, Peter; Fabry, Frederic; Faucher, Sébastien P.; Freeman, Julia; Geitmann, Anja; George, Saji; Georges, Elias; Gillung, Jessica; Goldstein, Benjamin; Gravel, Valérie; Harou, Aurélie; Head, Jessica; Hendrickson-Nelson, Mary; Hickey, Gordon M.; Hoyos-Villegas, Valerio; Humphries, Murray; Ismail, Ashraf A.; Jabaji, Suha; Jardim, Armando; Jock, Brittany; Kallenbach, Cynthia; Karboune, Salwa; Kimmins, Sarah; Koski, Kristine G.; Kosoy, Nicolas; Kubow, Stan; Kushalappa, Ajjamada C.; Leduc, Mathieu; Lefsrud, Mark G.; Liu, Qian (Vivian); Long, Thavy; Lopes, Fernando; Lu, Xianan; Madramootoo, Chandra; Mailloux, Ryan; Major, Julie; Marquis, Grace S.; McKinney, Melissa; Melgar-Quiñonez, Hugo Ramiro; Mustafa, Arif F.; Ngadi, Michael O.; Nielsen, Daiva; Orsat, Valérie; Phillips, Sandy; Plourde, Hugues; Prasher, Shiv O.; Prichard, Roger K.; Qi, Zhiming; Raghavan, G.S. Vijaya; Ramaswamy, Hosahalli; Rohrbach, Petra; Ronholm, Jennifer; Rose, Maureen; Routhier, Joane; Roy, Denis; Salavati, Reza; Scott, Marilyn E.; Seguin, Philippe; Simpson, Benjamin K.; Singh, Jaswinder; Smith, Donald L.; Strachan, Ian; Stromvik, Martina V.; Sun, Shangpeng; Thériault, Pascal; Thomassin, Paul; Titley-Péloquin, David; Vasseur, Elsa; Wade, Kevin; Wang, Yixiang; Wees, David D.; Whalen, Joann; Whyte, Lyle G.; Wykes, Linda; Xia, Jeff; Yaylayan, Varoujan A.; Zhao, Xin.

