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

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13.1 The Faculty

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.

13.1.1 Location

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

Telephone: (514)398-7928
Website: www.mcgill.ca/macdonald

The Faculty of Agricultural and Environmental Sciences and the School of Dietetics and Human Nutrition are located on the Macdonald Campus of McGill University in Sainte-Anne-de-Bellevue at the western end of the Island of Montreal.

Served by public transport (STM, bus and train), it is easily reached from the McGill downtown campus and from Dorval (Pierre Elliott Trudeau) International Airport. A McGill intercampus shuttle bus service is also available.

13.1.2 Administrative Officers

Deborah J.I. Buszard; B.Sc.(Bath), Ph.D.(Lond.) **Dean, Faculty of Agricultural and Environmental Sciences, and Associate Vice-Principal (Macdonald Campus)**

William H. Hendershot; B.Sc.(Tor.), M.Sc.(McG.), Ph.D.(U.B.C.) **Associate Dean (Academic)**

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

Marcel J. Couture; B.Sc.(Agr.)(McG.), M.Sc.(Guelph) **Associate Dean (Community Relations)**

Marc G. Fortin; B.Sc., M.Sc.(Laval), Ph.D.(McG) **Associate Dean (Research)**

Gary O'Connell; B.Comm.(C'dia) **Director, AdministrativeServices**

Suzanne Higgins; B.A.(McG.) **Manager, Admissions and StudentAffairs**

William R. Ellyett; B.A.(Sir G. Wms.), B.Ed.(Phys.Ed.)(McG.) **Director of Athletics**

Philip Lavoie; Dip.Agr., B.Sc.(Agr.)(McG.) **Manager, Macdonald Campus Farm**

Ginette Legault **Manager, Campus Housing**

Peter D.L. Knox; B.Sc.(Agr.)(McG.) **Supervisor, PropertyMaintenance**

13.1.3 Programs

The Faculty of Agricultural and Environmental Sciences and the School of Dietetics and Human Nutrition offer degrees in Bachelor of Science in Agricultural and Environmental Sciences, Bachelor of Engineering in Bioresource Engineering, Bachelor of Science in Food Science, Bachelor of Science in Nutritional Science, Certificate in Ecological Agriculture, Certificate in Entrepreneurship, Diploma in the Environment, and Diploma of Collegial Studies in Farm Management and Technology.

The Faculty of Agricultural and Environmental Sciences is one of the three faculties in partnership with the McGill School of Environment.

Several programs offered by the Faculty and School lead to professional accreditation. These include Dietetics (membership in the Dieticians of Canada and the Ordre professionnelle de diététistes du Québec); Agricultural Economics, Agricultural Sciences, Agricultural Sciences Internship, Animal Science and Plant Science (membership in the Ordre des agronomes du Québec and other provicial Institutes of Agriculture); Bioresource Engineering (membership as a professional Engineer in any province of Canada plus the Ordre des agronomes du Québec). Professional Practice experiences to complete the dietetics practicum are provided in the McGill teaching hospitals and in a wide variety of health, education, business, government and community agencies.

The Faculty also offers M.Sc. and Ph.D. programs in the areas of Agricultural Sciences, Biological Sciences, Bioresource Engineering, Environmental Sciences, Food Science, and Nutritional Sciences. In addition, a Graduate Certificate in Biotechnology and a Graduate Diploma in Dietitian Credentialing are offered.

The Institute of Parasitology offers graduate programs leading to M.Sc. and Ph.D. degrees as well as a non-thesis M.Sc.(A) in Biotechnology and a Graduate Certificate in Biotechnology. Major areas of research include the molecular biology, immunology, and population biology of parasites and their hosts and the biochemical pharmacology of antiparasite drugs. The underlying orientation of all research is to apply relevant modern biological techniques to reduce parasite transmission and to improve methods of diagnosis and control. The research background and activities of the staff encompass many disciplines applied to the study of host-parasite interactions of protozoa and helminth parasites of humans, livestock and other animals, as well as cancer biology. The Institute has been designated by the Quebec Government as a Centre for Host-Parasite Interactions.

13.1.3.1 Internship Opportunities and Co-op Experience

All students in agricultural programs have the opportunity to participate in a summer-long internship on a farm or related agricultural enterprise. Students who register in the Agricultural Sciences Internship Program benefit from two summers of internship experience, one on a farm and the other in industry, in research, or with an accredited agrologist.

Most undergraduate programs offered in the Faculty include the opportunity for a Co-op work experience. Internships and Co-op experience both involve a work placement of a minimum 12 weeks' duration where the student is exposed to the main areas of operation of the employer. Each work placement is unique, and the student benefits from a program developed by both the employer and the instructor exclusively for that student.

Students who register for a Co-op experience benefit from practical learning arising from work-term employment in a meaningful job situation. Students also benefit from the non-tangible learning experience arising from the increased responsibilities required to obtain and successfully complete the work term. Students have the opportunity to pursue a 6 credit internship within the Barbados and Panama Field Studies semesters. For details, see www.mcgill.ca/mse/field_study.

13.1.3.2 Exchange Programs

The Faculty of Agricultural and Environmental Sciences participates in all university-wide student exchange programs available at McGill and also has faculty-specific exchange programs. For more information, please see section 15.2 "Exchange Programs".

13.1.4 Macdonald Campus Facilities

Morgan Arboretum
The Morgan Arboretum has 245 hectares of managed and natural woodlands, fields and tree plantations used for environmental research and teaching in a wide range of courses. Groups of most Canadian native trees and many useful and important exotics are also present. The Arboretum features three self-guided interpretation trails, 20 kilometres of wooded trails, a variety of forest ecosystems, soil and water conservation projects, forest operations such as plantation management, timber harvesting and maple syrup production, and related forestry-wildlife ecological activities. A nature interpretation program is also offered.

Macdonald Campus Library
Located in the Barton Building, the Macdonald Campus Library's collection encompasses a wide variety of resources in agriculture, food and animal science, nutrition, entrepreneurship, the environment, ecology, plant science, and biotechnology. The library is a depository for many print and electronic government publications. All computers provide access to the on-line catalogue (MUSE), databases, electronic journals and resources, as well as the Internet. In the electronic classroom, students can do research, write papers, and save documents. The library is a wireless zone allowing students to use laptops that have wireless network interface cards. There are designated areas in the library that allow laptops to connect to the McGill server and Internet via VPN (Virtual Private Network). Students can request articles or books through the interlibrary loan service; the forms are available on-line. Reference service is available to assist users in obtaining necessary print or electronic resources, and a comprehensive library instruction service is provided throughout the year. For further information about Macdonald Campus Library visit the Website at www.mcgill.ca/macdonald-library or feel free to drop by.

Macdonald Campus Computing Centre
The Macdonald Campus Computing Centre is responsible for a multi-platform network of Novell and Windows servers. Housed in the Macdonald-Stewart Building complex are 3 undergraduate labs open 24/7, 15 public e-mail stations around campus and a first-level help desk during regular work hours. Apart from supporting the staff and student servers, the centre is also the gateway to the many services offered from the downtown campus such as e-mail, WWW, and library systems. Visit the virtual help desk for more information at www.agrenv.mcgill.ca/computing, call (514) 398-7600 or e-mail lise.menard@mcgill.ca.

Lyman Entomological Museum and Research Laboratory
Originally established in 1914 and formerly housed in the Redpath Museum, the Lyman Entomological Museum was moved to the Macdonald Campus in 1961. It houses the largest university collection of insects in Canada, second in size only to the National Collection. The Museum also has an active graduate research program in association with the Department of Natural Resource Sciences. Study facilities are available, on request from the Curator, to all bona fide students of entomology. Visits by other interested parties can be arranged by calling (514) 398-7914. More information is available at www.agrenv.mcgill.ca/facility/lyman.htm.

Brace Centre for Water Resources Management
The Brace Centre for Water Resources Management is located on the Macdonald Campus. It is a multidisciplinary and advanced research and training centre of McGill University, dedicated to solving problems of water management for all human and environmental uses. It brings together staff from several McGill faculties to undertake research, teaching, specialized training, and policy and strategic studies, both in Canada and internationally. The

Centre draws on the wide range of facilities available within the University. More information is available at www.mcgill.ca/brace.

13.1.5 The Student Affairs Office

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

13.2 Summary of Academic Programs

13.2.1 Outline of Academic Programs

Programs leading to three degrees are offered on the Macdonald Campus, with Majors associated with each degree. In addition, Certificates are offered in Ecological Agriculture and in Entrepreneurship.

13.2.1.1 Major Programs

Bachelor of Science in Agricultural and Environmental Sciences - B.Sc.(Ag.Env.Sc.)

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

- Agricultural Economics*
  - Agribusiness Option
  - Agricultural Systems Option
  - Natural Resource Economics Option
- Agricultural Sciences*
  - General Option
  - Ecological Agriculture Option
  - International Agriculture Option
  - Soils Option
  - Agricultural Biotechnology Option
- Agricultural Sciences Internship*
  - General Option
  - Ecological Agriculture Option
  - International Agriculture Option
  - Soils Science Option
  - Agricultural Biotechnology Option
- Animal Biology
- Animal Science*
- Applied Zoology
- Botanical Science
  - Ecology Option
  - Molecular Option
- Environmental Biology
- Environment, under McGill School of Environment
  - Biodiversity and Conservation Domain
  - Ecological Determinants of Health Domain
  - Environmetrics Domain
  - Food Production and Environment Domain
  - Land Surface Processes and Environmental Change Domain
  - Renewable Resource Management Domain
  - Water Environments and Ecosystems Domain
- Microbiology
  - Biotechnology Option
  - Ecology Option
  - Environment Option
- Plant Science*
- Resource Conservation
- Wildlife Biology

Bachelor of Engineering in Bioresource Engineering - B.Eng.(Bioresource)

This normally leads to professional qualification in any provincial professional engineering order plus the Ordre des agronomes du Québec.

- Bioresource Engineering

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

Note: Admission to this program is presently suspended. The program is undergoing revision.

- Food Science

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

Two Majors are offered by the School of Dietetics and Human Nutrition.

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

13.2.1.2 Minor Programs

- Agricultural Economics
- Agricultural Production
- Ecological Agriculture
- Entrepreneurship
- Minor in Environment, under McGill School of Environment
- Environmental Engineering
- Human Nutrition

13.2.1.3 Certificate Programs

- Ecological Agriculture
- Entrepreneurship

13.2.1.4 Diploma Program

- Diploma in Environment, under McGill School of Environment

13.2.1.5 Diploma in Collegial Studies

- Farm Management and Technology

13.2.2 Environmental Sciences Programs

McGill School of Environment (MSE)

The MSE 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, B.Sc. Major in Environment, a B.A. Faculty Program in Environment, a Minor in Environment and a Diploma in Environment. Many of the MSE programs allow students to choose to study exclusively on the Macdonald or downtown campuses, or to take advantage of both.

A list of the B.Sc.(Ag.Env.Sc.) Domains is given under section 13.2.1.1 "Major Programs". Further information on all programs is given under the McGill School of Environment.

Other Environmental Programs at Macdonald Campus

A number of other integrated environmental science programs are also offered on the Macdonald Campus. The objective of these interdepartmental programs is to provide the student with a well-rounded training in a specific interdisciplinary subject as well as the basis for managing the natural resource. The programs include:

- Agricultural Economics Major, Natural Resource Economics Option
- Applied Zoology Major
- Botanical Science Major
- Environmental Biology Major
- Microbiology Major
- Resource Conservation Major

Wildlife Biology Major

13.3 Faculty Admission Requirements

For information about the admission requirements for this faculty please see section 3 "Application Procedures, Admission Requirements".

For information about inter-faculty transfers, see section 4.3.11 "Inter-Faculty Transfer".

Applicants are encouraged to submit applications on-line at www.mcgill.ca/applying. Please note that the same application is used for all undergraduate programs at McGill and two program choices can be entered. For information, or to obtain a printed application package for students unable to apply via the Web, contact:

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

Telephone: (514) 398-7928
E-mail: studentinfo.macdonald@mcgill.ca
Website: www.mcgill.ca/macdonald/studentaffairs

More specific information on application deadlines and admission requirements can be found on the Web or in the "General Admission and Documentation Requirements", section3.5.

13.4 Student Information

13.4.1 Student Services

Students who study on the Macdonald Campus may make full use of all McGill Student Services, see section4.12. The Office of the Dean of Students, in cooperation with the Faculty of Agricultural and Environmental Sciences, offers students direct access to several services, see "Student Services – Macdonald Campus", section4.12.3.

For further information refer to the Macdonald Campus Student Services Website, www.mcgill.ca/macdonald-studentservices/, and the Student Services Website, www.mcgill.ca/studentservices/.

13.4.2 Athletic Services

All students who have paid Student Services fees are also eligible to use any Athletic facility without additional expense. For further information please visit the Website www.agrenv.mcgill.ca/society/athletic or telephone the Stewart Athletic Complex at (514) 398-7789.

13.4.3 Macdonald Campus Residences

Students may apply for residence in either of two distinctive facilities:

Laird Hall, with a capacity of more than 210 students, is arranged on a co-educational basis and provides single and double room accommodation for both undergraduate and graduate students.

The EcoResidence, Canada's first ecologically friendly student residence and winner of the Prix d'excellence from the Ordre des architectes du Québec, accommodates 100 students in apartment-style living.

For further information, please refer to "Residence Fees – Macdonald Campus", section4.13.2.1, or the Faculty Website, www.mcgill.ca/macdonald/resources/residences, or e-mail residences.macdonald@mcgill.ca.

13.4.4 Extracurricular Activities

All undergraduate, postgraduate, and Farm Management and Technology students are members of the Macdonald Campus Students' Society. The MCSS, through the 19-member Students' Council, is involved in numerous campus activities such as social events, academic affairs, and the coordination of clubs and organizations. Student life is informal and friendly and student groups range from the Outdoor Adventure Club to the Photography Society. Major social events include Orientation activities, Halloween Party and Winter Carnival. The Ceilidh, a student-run bar located in the Centennial Centre, is open every Thursday night.

The Centennial Centre is the centre of student life, offering facilities for student activities, such as meeting rooms, a Yearbook room, pool tables, great places to relax, listen to music and meet friends. Also located in the Centre are the Students' Council offices, an information desk, the Robber's Roost Campus Bookstore and cafeteria.

13.4.5 Student Rights and Responsibilities

The *Handbook of Student Rights and Responsibilities* is published jointly by the Office of the Dean of Students and the University Secretariat. A copy of the Handbook can be found on the Web at www.mcgill.ca/secretariat/documents or obtained from the Student Affairs Office or the Macdonald Campus Student Services Office.

13.4.6 Fees

The University reserves the right to make changes without notice in its published scale of tuition, residence and other fees.

All certified cheques, money orders, etc., should be drawn to the order of McGill University, and made payable in Canadian funds. Payment of student fees can also be made through any chartered bank in Canada.

The University shall have no obligation to issue any transcript of record, award any diploma or re-register a student in case of non-payment of tuition fees, library fines, residence fees, or loans on their due date.

Tuition Fees
General information on Tuition and other fees is found under "Fees", section4.5.

Other Expenses
In addition to tuition fees and the cost of accommodation and meals, students should be prepared to spend a minimum of $1,000 (dependent on program) on prescribed textbooks and classroom supplies. These may be purchased at the Campus Bookstore in the Centennial Centre.

Uniforms are required for food laboratories. Students in the B.Sc.(Nutr.Sc.) program will be advised of the uniform requirements on acceptance or promotion.

13.4.7 Immunization for Dietetics Majors

Students in the Dietetics Major are required to complete the Compulsory Immunization Program for Health Care Students prior to registration. Participation in Professional Practices (Stages) in Dietetics will only be permitted for those students who have completed all immunization requirements.

13.4.8 Language Requirement for Professions

Quebec law requires that candidates seeking admission to provincially recognized Quebec professional corporations or ordres possess a working knowledge of the French language, i.e., be able to communicate verbally and in writing in that language. Agrologists, chemists, dietitians, and engineers are among those within this group.

For additional information,see section 4.11.1 "Language Requirements for Professions".

13.5 Faculty Information and Regulations

Each student in the Faculty of Agricultural and Environmental Sciences must be aware of the Faculty Regulations as stated in this Calendar. While departmental and faculty advisers and staff are always available to give advice and guidance, the ultimate responsibility for completeness and correctness of course selection and registration, for compliance with, and completion of program and degree requirements, and for the observance of regulations and deadlines *rests with the student*. It is the student's 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.

13.5.1 Minimum Credit Requirement

Students must complete the minimum credit requirement for the degree as specified in the 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 to students who 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, 96 credits for Agricultural Sciences Major Internship Options, 111 credits for Bioresource Engineering, and 115 credits for Dietetics.

Students from outside Quebec who are admitted on the basis of a high school diploma enter the Freshman Major (see "Freshman Major", section13.5.2).

Students will not receive credit towards their 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.

13.5.2 Freshman Major

Students entering university for the first time from a high school system (outside of Quebec CEGEP system) will be required to complete the 30credits listed below before selecting a subject Major.

		CREDITS
Required Courses - Fall		**14.5**
AEBI120	General Biology	3.0
AEMA101	Calculus 1	3.0
AEPH112	Introductory Physics 1	4.0
AGRI195*	Freshman Seminar 1	0.5
FDSC230	Organic Chemistry	4.0
Required Courses - Winter		**12.5**
AEMA102	Calculus 2	4.0
AEPH114	Introductory Physics 2	4.0
AGRI196*	Freshman Seminar 2	0.5
FDSC110	Inorganic Chemistry	4.0
Elective - Winter		**3.0**
Elective		3.0
Total Credits		**30.0**

AEBI202 Cellular Biology must be substituted for students in programs in the B.Sc.(Nutr.Sc.) degree.

BREE103 Linear Algebra must be substituted for students in the B.Eng.(Bioresource) degree.

* AGRI195 and AGRI196 are required for all freshmen, excluding Bioresource Engineering and optional for Dietetics and Nutrition students who may substitute an elective.

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.

Freshman students in the B.Sc.(Ag.Env.Sc.) degree will automatically be moved to the default major, Agricultural Sciences-General Option, upon completion of their freshman year. Students must provide a program change form if this is not the major of their choice.

13.5.3 Academic Advisers

Before registration, all students entering the Faculty must consult with the Academic Adviser of their program for selection and scheduling of required, complementary, and elective courses. The Academic Adviser will normally continue to act in this capacity for the duration of the student's studies in the Faculty.

13.5.4 Categories of Students

Full-Time Students

Full-time students in satisfactory standing take a minimum of 12credits per term.

Full-time students in probationary standing are not normally permitted to take more than 14 credits per term. In exceptional circumstances the Committee on Academic Standing may give permission to attempt more.

Part-time Students

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

13.5.5 Academic Standing

All students are required to give satisfactory evidence of mastery of 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 the standing of the student in all the work of the course.

The following rules apply to the academic standing of a student:

1. When a student's CGPA (or TGPA in the first term of the program) falls below 2.00, the student's academic standing becomes Probationary and withdrawal is advised but not required.
2. Students in Probationary standing may register for no more than 14 credits per term.
3. While in Probationary standing, students 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 a student's CGPA (or TGPA in the first term of the program) falls below 1.50, the student's academic standing becomes Unsatisfactory and withdrawal is required. (In the case of Fall term, the standing will be Interim Unsatisfactory standing and the rules for Probationary standing will apply.)
5. Students in Unsatisfactory standing are required to withdraw. Application for readmission may be made only after 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. Failure to meet at least one of these conditions will result in requirement for permanent withdrawal.

13.5.6 Credit System

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

Please refer to "Credit System", section4.6.2.

13.5.7 Academic Credit Transfer

Transfer credits based on courses taken at other institutions (completed with a grade of C or better) before entrance to this Faculty are calculated and assigned after an accepted applicant has confirmed that s/he is accepting the offer of admission.

Transfer credits may also be granted for courses taken at other institutions (completed with a grade of C or better) during a student's attendance at McGill University. Permission to apply such credits to a program in this faculty must be secured by the student before the work is undertaken. Prior Approval Forms are available in the Student Affairs Office in the Faculty. Grades obtained in such courses do not enter into calculations of grade point averages (GPA) in this faculty.

Exemption from a required or complementary course on the basis of work completed at another institution must be approved by both the Instructor of the appropriate McGill course and the Academic Adviser.

Full-time students may, with the written approval of the Student Affairs Office, register for 3 credits, or exceptionally 6 credits, in each term at any university in the province of Quebec. These courses successfully completed with a minimum grade of C (according to the standards of the university giving the course), will be recognized for the purpose of the degree but the grades obtained will not enter into calculations of GPA in this Faculty. For further details, see section 4.3.4 “Quebec Inter-University Transfer Agreement (IUT)”.

13.5.8 Regulations Regarding Second Academic Majors

While registered in a Major in the Faculty of Agricultural and Environmental Sciences, a student may pursue a second set of courses of greater scope than a Minor (e.g., Faculty Program, Major, Honours Program, Major Concentration) in either this Faculty or another faculty. Application for a Second Academic Major shall be made to the Associate Dean (Student Affairs) in the Student Affairs Office, Laird Hall, Room 106. Following are the regulations and procedures for Second Academic Majors:

1. The applicant for a Second Academic Major must be in Satisfactory academic standing with a minimum CGPA of 3.00.
2. The applicant, in consultation with the appropriate authority associated with each Major (Academic Adviser, Associate Dean) must construct a proposal showing all the courses that are to be taken to satisfy the entrance and program requirements of both the First and Second Academic Majors.
3. A minimum of 36 credits must be unique to the Second Major (i.e., not part of the Required or Complementary courses taken for the First Major).
4. Students in the Faculty of Agricultural and Environmental Sciences must obtain prior approval for all proposed Second Academic Majors from their Academic Adviser and the Student Affairs Office and from the Associate Dean, adviser or appropriate committee of the other faculty concerned.
5. Normally, proposals for Second Academic Majors will be initiated before completion of U1 year of the First Academic Major.
6. The academic standards applicable to each Major will be respected.

13.5.9 Course Change Information

1. Courses: please refer to "Course Change Period", section4.3.6 and the Calendar of Dates.
2. Course withdrawal (Transcript notation of “W”): please refer to "Regulations Concerning Course Withdrawal", section4.3.7 and the Calendar of Dates.
3. Other changes: Information about changes may be obtained from the Student Affairs Office of the Faculty.

13.5.10 Graduate Courses Available to Undergraduates

Undergraduates wishing to take such courses must have a cumulative grade point average (CGPA) of at least 3.20. Final approval must be obtained from the Graduate and Postdoctoral Studies Office.

13.5.11 Attendance and Conduct in Class

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

Students may be admonished by a professor or instructor for dishonest or improper conduct or may be reported to the Dean or Director concerned for disciplinary action.

Punctual attendance at all classes, laboratory periods, tests, etc., is expected of all students. Absences are excused only on grounds of necessity or illness, of which proof may be required. Special attention is called to the fact that the completion of all laboratory work is obligatory and the opportunity to make up work missed will be provided only in the case of properly excused absences.

The Faculty has the power to refuse examination to those students who persist in absenting themselves from classes without permission.

Students are requested not to make application for additional leave either before or after holiday periods, as such leaves are granted only in case of illness or other exceptional circumstances.

13.5.12 Incomplete Grades

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

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

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

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

Students with a grade of K who have serious extenuating circumstances may request an extension of the K deadline (KE) from the Associate Dean (Student Affairs). Please refer "Grading and Grade Point Averages (GPA)", section4.6.3 for more information about grading and credit.

13.5.13 Examinations

Students should refer to "Examinations", section4.7 for information about final examinations and deferred examinations.

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

Oral presentations made as part of course requirements shall be in English.

13.5.13.1 Reassessments and Rereads

In accordance with the Charter of Student Rights, and subject to the conditions stated therein, students have the right to consult any written submission for which they have received a mark as well as the right to discuss this submission with the examiner.

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

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

Application for rereads must be made by March 31 for Fall term courses and by September 30 for Winter term and Summer term courses. Students are assessed a fee for formal rereads. Any request to have term work re-evaluated must be made directly to the instructor concerned. Students should consult the Student Affairs Office for further information.

13.5.13.2 Deferred Examinations

The Faculty offers deferred exams for the Fall and Winter period. Verify date in Calendar of Dates and consult the Student Affairs Office for procedures.

13.5.14 Degree Requirements

To be eligible for a B.Eng.(Bioresource), B.Sc.(Ag.Env.Sc.), or B.Sc.(Nutr.Sc.) degree, students must have passed, or achieved exemption in, all required and complementary courses of the program. They must have a CGPA of at least 2.00.

They must have completed the minimum credit requirement for the degree as specified in their letter of admission or its attached documentation, "Minimum Credit Requirement", section13.5.1. At least 60 of these credits must have been taken at McGill.

In addition, students in the Dietetics program must have completed the Stages of professional formation requiring a CGPA of 2.5.

13.5.15 Distinction or Great Distinction

Students in Major programs whose academic performance is appropriate may be awarded their degrees with *Distinction* or *Great Distinction* under the following conditions:

- for *Distinction*, the CGPA at graduation must be 3.30 to 3.49;
- for *Great Distinction*, the CGPA at graduation must be 3.50 or greater.

13.5.16 Dean's Honour List

The designation *Dean's Honour List* may be awarded to graduating students under the following conditions:

- students must be in the top 10% of the Faculty's graduating students.

13.5.17 Medals and Prizes

Various medals, scholarships and prizes are open to graduating students. No application is required. Full details of these are set out in the *Undergraduate Scholarships and Awards Calendar,* available in the Student Affairs Office, Laird Hall, Room 106.

13.6 Academic Programs

13.6.1 Department of Agricultural Economics

Raymond Building – Room R3-019
Telephone: (514) 398-7820
Fax: (514) 398-8130
Website: www.agrenv.mcgill.ca/agrecon

Chair — John C. Henning

Associate Professors — Laurence Baker, JohnC. Henning, PaulThomassin

Assistant Professor — Ka-Yan Diana Mok

Lecturers — Joan Marshall

AGRICULTURAL ECONOMICS MAJOR

Increasingly complex economic problems facing the agriculture and food system and our natural environment have intensified the need for specialized knowledge and training in the field of agricultural economics. The curriculum is designed to provide students with the knowledge, analytical and decision-making skills required in a career in agribusiness, resource management, international development, and research. The selection of courses from the agribusiness, agricultural system or natural resource economics options permits a degree of specialization along those lines, in conjunction with the core courses listed below.

Graduates are eligible to apply for membership in the Ordre des agronomes du Québec (OAQ) if they fulfill the agronomic course requirements (consult the academic adviser).

Core Required Courses: 39 credits
Core Complementary Courses: 12 credits

		CREDITS
Required Courses:		**39**
AGEC200	Principles of Microeconomics	3
AGEC201	Principles of Macroeconomics	3
AGEC230	Agricultural and Food Marketing	3
AGEC231	Economic Systems of Agriculture	3
AGEC242	Management Theories and Practices	3
AGEC320	Economics of Agricultural Production	3
AGEC333	Resource Economics	3
AGEC343	Accounting and Cost Control	3
AGEC425	Agricultural Econometrics	3
AGEC430	Agriculture, Food and Resource Policy	3
AGEC440	Advanced Agriculture and Food Marketing	3
AGEC442	Economics of International Agricultural Development	3
AGEC491	Research Seminar in Agricultural Economics	3
Complementary Courses:		**12**
One course in introductory statistics (approved by adviser)		3
plus 9 credits chosen from the following list		9
BREE300	(3) Elements of Agricultural Engineering	
ANSC250	(3) Principles of Animal Science	
FDSC200	(3) Introduction to Food Science	
PLNT211	(3) Principles of Plant Science	
SOIL210	(3) Principles of Soil Science	

AGRIBUSINESS OPTION

Whether one has interests in agricultural supply, production, marketing, finance, food processing or retailing, professional management skills are the key to success. The agribusiness option prepares students for managerial responsibility by drawing on the resources of both the Faculty of Management and the Faculty of Agricultural and Environmental Sciences. This special partnership provides students with not only a first-class business training but also a specialization in the field of agriculture.

Core Required and Complementary Courses: 51 credits
Option Required and Complementary Courses: 21 credits
Electives: To meet the minimum credit requirement for the degree.

		CREDITS
Option Required Courses:		**12**
AGEC331	Farm Business Management	3
AGEC350	Agricultural Finance	3
AGEC450	Agriculture Business Management	3
AGEC453	Venture Capital Opportunities	3
Option Complementary Courses:		**9**
9 credits chosen from the following list:		9
ACCT311 (3)	Financial Accounting 1	
ACCT313 (3)	Management Accounting 1	
AGEC344 (3)	Entreprenurial Leadership	
BUSA364 (3)	Business Law 1	
FINE448 (3)	Derivatives and Risk Management	
MGCR341 (3)	Finance 1	
MGCR382 (3)	International Business	
MRKT451 (3)	Marketing Research	
NUTR446 (3)	Applied Human Resources	

AGRICULTURAL SYSTEMS OPTION

The smooth functioning of the agriculture and food system requires good market analysis and appropriate policy and program development and management in the public sector. Agricultural economists are called upon to perform these tasks, utilizing their knowledge of the economic forces that affect the industry and the methods of analysis to predict the outcome of the numerous changes that occur. The agricultural systems orientation is intended to provide students with a broad understanding of the many dimensions of agriculture and food systems, including economic development, international agriculture, and food and agricultural policy.

Core Required and Complementary Courses: 51 credits
Option Required and Complementary Courses: 21 credits
Electives: To meet the minimum credit requirement for the degree

		CREDITS
Option Required Courses:		**12**
AGEC331	Farm Business Management	3
AGEC350	Agricultural Finance	3
AGEC450	Agriculture Business Management	3
AGRI340	Principles of Ecological Agriculture	3
Option Complementary Courses:		**9**
9 credits chosen from the following list:		9
AGEC344 (3)	Entreprenurial Leadership	
AGRI210 (3)	Agro-Ecological History	
AGRI411 (3)	International Agriculture	
AGRI435 (3)	Soil and Water Quality Management	
ENVR201 (3)	Society and Environment	
ENVR203 (3)	Knowledge, Ethics and Environment	
NUTR207 (3)	Nutrition and Health	

NATURAL RESOURCE ECONOMICS OPTION

This option integrates biological sciences and environmental decision making with the economics of natural resource use and development. The natural resource economics option is intended to prepare students for careers in the management of natural resources and the analysis of natural resource problems and policies.

Core Required and Complementary Courses: 51 credits
Option Required and Complementary Courses: 32 credits

Electives: To meet the minimum credit requirement for the degree

		CREDITS
Option Required Courses:		**12**
AEMA306	Mathematical Methods in Ecology	3
NRSC333	Physical and Biological Aspects of Pollution	3
NRSC437	Assessing Environmental Impact	3
WILD205	Principles of Ecology	3
Option Complementary Courses:		**9**
9 credits chosen from the following list:		9
AGEC344 (3)	Entreprenurial Leadership	
AGRI210 (3)	Agro-Ecological History	
ECON405 (3)	Natural Resource Economics	
ENVR203 (3)	Knowledge, Ethics and Environment	
NRSC201 (3)	Introductory Meteorology	
NUTR420 (3)	Toxicology and Health Risks	
WILD415 (3)	Conservation Law	
WILD421 (3)	Wildlife Conservation	

MINOR IN AGRICULTURAL ECONOMICS

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

General Regulations:
To obtain a Minor in Agricultural Economics, students must:

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

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

Required Courses: 12 credits
Complementary Courses: 12 credits

		CREDITS
Required Courses		**12**
AGEC200	Principles of Microeconomics	3
AGEC201	Principles of Macroeconomics	3
AGEC230	Agricultural and Food Marketing	3
AGEC231	Economic Systems of Agriculture	3
Complementary Courses		**12**
Chosen in consultation with the academic adviser for the Minor from the offerings of the Department of Agricultural Economics.		
AGEC242 (3)	Management Theories and Practices	
AGEC320 (3)	Economics of Agriculture Production	
AGEC331 (3)	Farm Business Management	
AGEC333 (3)	Resource Economics	
AGEC343 (3)	Accounting and Cost Control	
AGEC350 (3)	Agricultural Finance	
AGEC425 (3)	Agricultural Econometrics	
AGEC430 (3)	Agriculture, Food and Resource Policy	
AGEC440 (3)	Advanced Agricultural and Food Marketing	
AGEC442 (3)	Economics of International Development	
AGEC450 (3)	Agriculture Business Management	
AGEC491 (3)	Research Seminar in Agricultural Economics	
AGEC492 (3)	Special Topics in Agricultural Economics	

MINOR IN ENTREPRENEURSHIP

Academic Adviser: Robert Oxley

The Minor is concerned with the genesis and development of entrepreneurial activities. It deals with marketing, finance, organization, and policy in the development and expansion of small businesses in the agri-food and environment sectors. This 24-credit Minor will be of interest to students who wish to develop the skills

and perspectives necessary to be successful in an entrepreneurial environment, whether it be self-employed in a start-up business or within an established corporation that employs entrepreneurial management strategies.

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 the requirements of the Minor.

General Regulations:
To obtain a Minor in Entrepreneurship, students must:

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

b) Complete the 24 credits listed below, of which not more than 6credits may be counted for both the Major and the Minor programs.

Required Courses (24 credits)

AGEC200 (3) Principles of Microeconomics
AGEC230 (3) Agricultural and Food Marketing
AGEC242 (3) Management Theories and Practices
AGEC343 (3) Accounting and Cost Control
AGEC344 (3) Entrepreneurial Leadership
AGEC450 (3) Agriculture Business Management
AGEC453 (3) Venture Capital Opportunities
NUTR446 (3) Applied Human Resources

CERTIFICATE IN ENTREPRENEURSHIP

Academic Adviser: Robert Oxley

This 30-credit Certificate Program is very similar to the Minor Program and is concerned with the genesis and development of entrepreneurial activities. It deals with marketing, finance, organization, and policy in the development and expansion of small businesses in the agri-food and environment sectors. The Certificate will be of interest to students who already hold a bachelor's degree and wish to develop the skills and perspectives necessary to be successful in an entrepreneurial environment, whether it be self-employed in a start-up business or within an established corporation that employs entrepreneurial management strategies.

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 Faculty. Students who have completed the Minor in Entrepreneurship are not permitted to register for this program.

General Regulations
To obtain a Certificate in Entrepreneurship, students must complete a minimum of 30 credits from the courses as given below.

Required Courses: 27 credits
Complementary Course: 3 credits

		CREDITS
Required Courses:		**27**
AGEC200	Principles of Microeconomics	3
AGEC230	Agricultural and Food Marketing	3
AGEC242	Management Theories and Practices	3
AGEC343	Accounting and Cost Control	3
AGEC344	Entrepreneurial Leadership	3
AGEC450	Agriculture Business Management	3
AGEC453	Venture Capital Opportunities	3
AGEC492	Special Topics in Agricultural Economics	3
NUTR446	Applied Human Resources	3

Complementary Course: **3**
one of the following courses:

ENVR201 (3) Society and Environment
ENVR203 (3) Knowledge, Ethics and Environment
RELG270 (3) Religious Ethics and the Environment

13.6.2 Department of Animal Science

Macdonald Stewart Building - Room MS1-084
Telephone: (514) 398-7794
Fax: (514) 398-7964
E-mail: animal.science@mcgill.ca
Website: www.mcgill.ca/animal

Chair — Xin Zhao

Emeritus Professor — JohnE. Moxley

Professors — RogerB. Buckland, BruceR.Downey, KwetFaneNgKwaiHang, FlannanHayes, UrsKuhnlein

Associate Professors — Roger I. Cue, HumbertoG.Monardes, LeroyE.Phillip, Kevin Wade, David Zadworny, Xin Zhao *(William Dawson Scholar)*

Assistant Professors — Vilceu Bordignon, René Lacroix(PT), ArifF.Mustafa, CiroRuiz-Feria

Associate Member — Ri-Cheng Chian

Adjunct Professors — PierreLacasse, DanielLefebvre, BruceMurphy

The Department of Animal Science offers Majors in Animal Science and Animal Biology.

ANIMAL SCIENCE MAJOR

Academic Advisers: V Bordigon (U1), K. M. Wade (U2), K.F. Ng-Kwai-Hang (U3)

The curriculum in Animal Science involves intensive training in both the basic and applied biological sciences as related to domestic animals and qualifies the graduate for membership in the Ordre des agronomes du Québec and other professional organizations. Graduates generally enter agricultural industries, mainly sales and marketing, government service (Provincial or Federal), extension, teaching or postgraduate studies. Some students go on to study veterinary medicine. Students are strongly advised to obtain at least 3 months' practical experience on a commercial livestock farm before graduation.

Required Courses: 63 credits
Complementary Courses: 6 credits
Electives: 21 credits to meet the minimum credit requirement for the degree

		CREDITS
Required Courses:		**63**
AEMA310	Statistical Methods 1	3
AGEC200	Principles of Microeconomics	3
AGRI341	Ecological Agriculture Systems	3
ANSC250	Principles of Animal Science	3
ANSC301	Principles of Animal Breeding	3
ANSC312	Animal Health and Disease	3
ANSC323	Mammalian Physiology	4
ANSC324	Animal Reproduction	3
ANSC330	Fundamentals of Nutrition	3
ANSC433	Animal Nutrition	3
ANSC450	Dairy Cattle Production	3
ANSC452	Beef Cattle and Sheep Production	3
ANSC454	Swine Production	3
ANSC456	Poultry Production	3
ANSC495D1	Seminar	1
ANSC495D2	Seminar	1
BREE322	Organic Waste Management	3
FDSC211	Biochemistry 1	3
MICR230	Introductory Microbiology	3
PLNT211	Principles of Plant Science	3
SOIL210	Principles of Soil Science	3
WILD375	Issues: Environmental Sciences	3

Complementary Courses: **6**

One Ethics course: 3

ENVR203 (3) Knowledge, Ethics and Environment
or RELG270 (3) Religious Ethics and the Environment

One additional Economics course 3

ANIMAL BIOLOGY MAJOR

Academic Adviser: H. Monardes

The Animal Biology Major is directed towards students who wish to further their studies in the basic biology of the larger mammals and birds. Successful completion of the program will enable students to qualify in applying to most professional schools in North America, to postgraduate schools in a variety of biological-oriented programs, and to work in most laboratory settings. The program is not intended for students wishing to become professional agrologists.

Required Courses: 34 credits
Complementary Courses: 24 credits, minimum
Electives: To meet the minimum credit requirement for the degree

		CREDITS
Required Courses:		**34**
AEBI202	Cellular Biology	3
AEMA310	Statistical Methods 1	3
ANSC234	Biochemistry 2	3
ANSC250	Principles of Animal Science	3
ANSC251	Comparative Anatomy	3
ANSC323	Mammalian Physiology	4
ANSC330	Fundamentals of Nutrition	3
ANSC495D1	Seminar	1
ANSC495D2	Seminar	1
CELL204	Genetics	4
FDSC211	Biochemistry 1	3
MICR230	Introductory Microbiology	3

Complementary Courses: **24**

A minimum of 24 credits selected from the following list in consultation with the Academic Adviser:

ANSC301 (3) Principles of Animal Breeding
ANSC312 (3) Animal Health and Disease
ANSC324 (3) Animal Reproduction
ANSC400 (3) Eukaryotic Cells and Viruses
ANSC424 (3) Metabolic Endocrinology
ANSC433 (3) Animal Nutrition
ANSC460 (3) Biology of Lactation
MICR341 (3) Mechanisms of Pathogenicity
ENTO550 (3) Veterinary and Medical Entomology
PARA438 (3) Immunology
WILD307 (3) Natural History of Vertebrates
WILD311 (3) Ethology
WILD410 (3) Wildlife Ecology
WILD424 (3) Parasitology
WILD350 (3) Mammalogy

The student may replace up to 12 credits of the complementary courses listed above by choosing, with the student adviser's approval, any course offerings (300 level or higher) in Anatomy and Cell Biology, Biochemistry, Biology, Microbiology and Immunology, Neurology and Neurosurgery, Pharmacology and Therapeutics, Physiology, and Psychology. Any prerequisites for these courses must be taken as electives.

13.6.3 Department of Bioresource Engineering

Macdonald Stewart Building – Room MS1-027
Telephone: (514) 398-7773
Fax: (514) 398-8387
E-mail: robert.kok@mcgill.ca
Website: www.mcgill.ca/agreng

Chair — Robert Kok

Emeritus Professor — RobertS. Broughton

Professors — Suzelle Barrington, Robert Kok, ChandraMadramootoo *(James McGill Professor)*, EdwardMcKyes, ShivO. Prasher *(James McGill Professor)*, G.S.VijayaRaghavan *(James McGill Professor)*

Associate Professors — Robert B. Bonnell *(Brace Centre for Water Resources Management)*, Michael O. Nqadi *(William Dawson Scholar)*, JohnD.J.Sheppard

Assistant Professor — Ning Wang

BIORESOURCE ENGINEERING MAJOR

The Department of Bioresource Engineering collaborates with other departments and the Faculty of Engineering in providing courses of instruction for a curriculum in Bioresource Engineering. Graduates qualify to apply for registration as professional engineers in any province of Canada.

Via the appropriate choice of elective course sets, a particular area of study may be emphasized. Principal options are: Bio-Environmental Engineering, Soil and Water Engineering, Food and Bioprocess Engineering, and Agricultural Engineering.

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

Students also have the opportunity to pursue a Minor. Several possibilities are: Agricultural Production, Environment, Ecological Agriculture, Biotechnology, Computer Science, Construction Engineering and Management, Entrepreneurship, and Environmental Engineering. Details of some of these Minors can be found in the Faculty of Engineering "Minor Programs and Choice of Electives or Complementary Courses", section8.5. To complete a Minor, it is necessary to spend at least one extra term beyond the normal requirements of the B.Eng.(Bioresource) program.

Required Courses: 50 credits
Complementary Courses: 61 credits

		CREDITS
Required Courses:		**50**
BREE205	Elements of Bioresource Engineering	3
BREE210	Mechanical Analysis and Design	3
BREE252	Computing for Engineers	3
BREE301	Biothermodynamics	3
BREE305	Fluid Mechanics	3
BREE312	Electric Circuits and Machines	3
BREE319	Engineering Mathematics	3
BREE327	Bio-Environmental Engineering	3
BREE341	Mechanics of Materials	3
BREE481	Undergraduate Seminar 1	.5
BREE482	Undergraduate Seminar 2	.5
BREE483	Undergraduate Seminar 3	.5
BREE484	Undergraduate Seminar 4	.5
BREE485	Undergraduate Seminar 5	.5
BREE486	Undergraduate Seminar 6	.5
BREE490	Design 1	3
BREE495	Design 2	3
AEMA202	Intermediate Calculus	3
AEMA305	Differential Equations	3
MECH291	Graphics	3
MIME221	Engineering Professional Practice	2
MIME310	Engineering Economy	3

Complementary Courses: **61**

Set A (6 credits):

One of the following: 3

AEMA310 (3) Statistical Methods 1
CIVE302 (3) Probabilistic Systems
MATH323 (3) Probability

One of the following: 3

CHEE315 (4) Heat and Mass Transfer
MECH346 (3) Heat Transfer

Set B - Basic Sciences (9 credits):

9 credits from the following, with at least 3 credits chosen from: 9

AEBI202	(3)	Cellular Biology
FDSC211	(3)	Biochemistry 1
MICR230	(3)	Introductory Microbiology
PLNT201	(3)	Comparative Plant Biology
WILD200	(3)	Comparative Zoology
WILD205	(3)	Principles of Ecology

and the remainder, if any, chosen from:

ANSC250	(3)	Principles of Animal Science
FDSC200	(3)	Introduction to Food Science
GEOG203	(3)	Environmental Systems
NRSC201	(3)	Introductory Meteorology
NRSC333	(3)	Physical and Biological Aspects of Pollution
NRSC437	(3)	Assessing Environmental Impact
NRSC510	(3)	Agricultural Micrometeorology
PLNT211	(3)	Principles of Plant Science
PLNT300	(3)	Cropping Systems
PLNT322	(3)	Greenhouse Management
PLNT421	(3)	Landscape Plant Materials
SOIL200	(3)	Introduction to Earth Science
SOIL210	(3)	Principles of Soil Science
SOIL326	(3)	Soil Genesis and Classification
SOIL331	(3)	Soil Physics
SOIL410	(3)	Soil Chemistry

Set C - Social Sciences (9 credits):

One 3-credit course on the impact of technology on society from the following list: 3

CHEE230	(3)	Environmental Aspects of Technology
CHEE430	(3)	Technology Impact Assessment
CIVE469	(3)	Infrastructure and Society
ENVR201	(3)	Society and Environment
MIME308	(3)	Social Impact of Technology
SOCI235	(3)	Technology and Society

Two 3-credit courses in the humanities and social sciences/administrative studies and law/language courses. (Any language course which is deemed by the academic adviser to have a sufficient cultural component or, in the case of the student who is not proficient in a specific language, program credit will be given for the second of two successfully completed, academically approved 3-credit language courses.) 6

Set D - Engineering (37 credits, minimum):

37 credits (minimum) from the following courses: 37

BREE214	(3)	Geomatics
BREE217	(3)	Hydrology and Water Resources
BREE314	(3)	Agri-Food Buildings
BREE315	(3)	Design of Machines
BREE322	(3)	Organic Waste Management
BREE323	(3)	Properties of Bio-Materials
BREE325	(3)	Food Process Engineering
BREE412	(3)	Machinery Systems Engineering
BREE416	(3)	Engineering for Land Development
BREE418	(3)	Soil Mechanics and Foundations
BREE419	(3)	Structural Design
BREE430	(3)	GIS for Bioresource Management
BREE501	(3)	Simulation and Modelling
BREE502	(3)	Drainage/Irrigation Engineering
BREE504	(3)	Instrumentation and Control
BREE506	(3)	Advances in Drainage Management
BREE509	(3)	Hydrologic Systems and Modelling
BREE512	(3)	Soil Cutting and Tillage
BREE515	(3)	Soil Hydrologic Modelling
BREE518	(3)	Bio-Treatment of Wastes
BREE519	(3)	Advanced Food Engineering
BREE525	(3)	Climate Control for Buildings
BREE530	(3)	Fermentation Engineering
BREE531	(3)	Post-Harvest Drying
BREE532	(3)	Post-Harvest Storage
AGRI435	(3)	Soil and Water Quality Management
CHEE474	(3)	Biochemical Engineering
CIVE202	(4)	Construction Materials
CIVE317	(3)	Structural Engineering 1
CIVE318	(3)	Structural Engineering 2

ENVIRONMENTAL ENGINEERING MINOR

The Minor program consists of 27 credits in courses that are environment related. By means of a judicious choice of complementary and elective courses, Bioresource Engineering students may obtain this Minor with a minimum of 12 additional credits.
The "Environmental Engineering Minor", section8.5.7, is administered by the Faculty of Engineering, Department of Civil Engineering and Applied Mechanics.

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

BREE322	Organic Waste Management
BREE416	Engineering for Land Development
BREE518	Bio-Treatment of Wastes
MICR331	Microbial Ecology
WILD333	Physical and Biological Aspects of Pollution

MINOR IN AGRICULTURAL ENGINEERING

The Minor in Agricultural Engineering was retired at the end of the 2004-05 academic year. Students currently enrolled in this program should consult the 2004-05 calendar.

BARBADOS FIELD STUDY SEMESTER

The Department of Bioresource Engineering, Faculty of Agricultural and Environmental Sciences, coordinates the 15-credit interdisciplinary Barbados Field Study Semester. For more information, see section 15.1.2 "Barbados Field Study Semester".

13.6.4 School of Dietetics and Human Nutrition

Macdonald Stewart Building – Room MS2-039
Telephone: (514) 398-7840
Fax: (514) 398-7739
E-mail: nutrition.dietetics@mcgill.ca
Website: www.mcgill.ca/dietetics

Director — Kristine G. Koski

Emeritus Professor — Helen R. Neilson

Professors — TimothyA.Johns, Peter J.H. Jones, HarrietV.Kuhnlein

Associate Professors — Laurie Chan *(NSERC Northern Research Chair)*, GraceEgeland *(Canada Research Chair),* Katherine Gray-Donald, KristineG. Koski, Stan Kubow, LouiseThibault, Linda Wykes *(William Dawson Scholar)*

Lecturers — Peter Bender (PT), LyndaFraser (PT), LindaJacobsStarkey, Mélanie Journoud, MaureenRose, JoaneRouthier, Sandy Phillips, HuguesPlourde, HeidiRitter

Adjunct Professors — Kevin A. Cockell, Jeffrey S.Cohn

Cross-Appointed Staff —
Food Science and Agricultural Chemistry: SelimKermasha
Medicine: Louis Beaumier, Franco Carli, Katherine Cianflone, RéjeanneGougeon, L.JohnHoffer, ErrolMarliss, ThomasSchricker, Jean-FrançoisYale
Parasitology: Marilyn E. Scott
Psychiatry: SimonYoung

Health and well-being of individuals in relation to food choices and physiological status prevails as the unifying theme of the programs in the School of Dietetics and Human Nutrition. The availability of

food, normal metabolism and clinical nutrition, community nutrition at the local and international level, the evaluation of nutritional products and their use in nutrition, and the communication of information about food and health form the core of academic programs.

DIETETICS MAJOR

Academic Advising Coordinator:

Linda Jacobs Starkey, Ph.D., RD, FDC

Graduates are qualified for challenging professional and leadership positions related to food and health, as dietitians, nutritionists and food administrators. The designations "Dietitian" and "Nutritionist" are reserved titles in the province of Quebec. As clinical nutritionists, dietitians may work in health-care settings and food service centres, nutrition counselling centres, clinics and private practice. As community nutritionists, dietitians are involved in nutrition education programs through school boards, sports centres and local and international health agencies. The dietitian in the food service sector participates in all aspects of management to assure quality food products. Postgraduate programs are available to qualified graduates. The duration of the program is three and one-half years.

Successful graduates are qualified for membership in Dietitians of Canada and the Ordre professionnelle de diététistes du Québec. Forty weeks of supervised professional experience in clinical and community nutrition and food service systems management are included.

Required Courses: 103 credits
Note: The School firmly applies prerequisite requirements for registration in all required courses in the Dietetics Major.
All required and complementary courses must be passed with a minimum grade of C.
Complementary Courses: 6 credits
Electives: 6 credits to meet the minimum credit requirements for the degree.

		CREDITS
Term 1		**15**
AGEC242	Management Theories and Practices	3
FDSC211	Biochemistry 1	3
NUTR207	Nutrition and Health	3
NUTR214	Food Fundamentals	3
One Elective or Complementary (see list below)		3
Term 2		**16**
BREE251	Microcomputer Applications	3
ANSC234	Biochemistry 2	3
MICR230	Introductory Microbiology	3
NUTR208*	Stage in Dietetics 1	1
NUTR217	Application: Food Fundamentals	3
One Elective or Complementary (see list below)		3
Summer		**3**
NUTR209*	Professional Practice Stage 1B	3
Term 3		**17**
AEMA310	Statistical Methods 1	3
AGEC343	Accounting and Cost Control	3
ANSC323	Mammalian Physiology	4
ANSC330	Fundamentals of Nutrition	3
NUTR322	Applied Sciences Communications	2
NUTR345	Food Service Systems Management	2
Term 4		**16**
ANSC424	Metabolic Endocrinology	3
NUTR310*	Stage in Dietetics 2A	1
NUTR337	Nutrition Through Life	3
NUTR344	Clinical Nutrition 1	4
NUTR346	Quantity Food Production	2
One Elective or Complementary (see list below)		3
Summer		**5**
NUTR311*	Stage in Dietetics 2B	5
Term 5		**17**
NUTR403	Nutrition in Society	3
NUTR445	Clinical Nutrition 2	5
NUTR446	Applied Human Resources	3
NUTR450	Research Methods: Human Nutrition	3
One Elective or Complementary (see list below)		3
Term 6		**12**
NUTR409*	Stage in Dietetics 3	8
NUTR436	Nutritional Assessment	2
NUTR438	Interviewing and Counselling	2
Term 7		**14**
NUTR510*	Professional Practice - Stage 4	14

Two Complementary Courses are to be selected from the following, as specified:
3 credits of Human Behavioural Science courses chosen from:
NUTR301 (3) Psychology
or equivalent course from another faculty.

3 credits from the social sciences:
AGEC200 (3) Principles of Microeconomics
AGEC230 (3) Agricultural and Food Marketing
ENVR201 (3) Society and Environment
ENVR203 (3) Knowledge, Ethics and Environment
RELG270 (3) Religious Ethics and the Environment
or equivalent courses from another faculty.

Elective Courses:
The following courses most often fit the timetable; elective choice is not limited to these courses.
FDSC200 (3) Introduction to Food Science
FDSC212 (3) Biochemistry Laboratory
FDSC251 (3) Food Chemistry 1
FDSC425 (3) Principles of Quality Assurance
NUTR420 (3) Toxicology and Health Risks
NUTR430 (3) Directed Studies: Dietetics and Nutrition 1
NUTR451 (3) Analysis of Nutrition Data
NUTR501 (3) Nutrition in Developing Countries
NUTR503 (3) Bioenergetics and the Lifespan
NUTR511 (3) Nutrition and Behaviour
NUTR512 (3) Herbs, Foods and Phytochemicals

* Successful completion of all component parts of each level of Stage (Professional Practice) in Dietetics courses is a prerequisite for the next level and must be passed with a minimum grade of C. Undergraduate registration is restricted to students in the Dietetics Major, CGPA greater than or equal to 2.50. Visiting students must contact the Academic Advising Coordinator (Dietetics) regarding course registration eligibility.

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

A compulsory immunization program exists at McGill which is required for Dietetics students to practice. Students should complete their immunization before arriving at Macdonald Campus; medical/health documentation must be received prior to commencement of Stage.

NUTRITION MAJOR

Academic Advising Coordinator: Kristine G. Koski, Ph.D., RD

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

teachers and researchers, postgraduates may be employed by government and health protection agencies, in world development programs or in the food sector.

Required Courses: 57 credits
All required courses must be passed with a minimum grade of C.
Complementary Courses: 15/16 credits
Electives: 17/18 credits 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.

		CREDITS
Required Courses:		**57**
Term 1		
FDSC 211	Biochemistry 1	3
FDSC 212	Biochemistry Laboratory	2
NUTR 207	Nutrition and Health	3
NUTR 214	Food Fundamentals	3
Term 2		
ANSC 234	Biochemistry 2	3
MICR 230	Introductory Microbiology	3
BREE 251	Microcomputer Applications	3
FDSC305	Food Chemistry 1	3
Term 3		
ANSC 323	Mammalian Physiology	4
NUTR 322	Applied Sciences Communication	2
AEMA 310	Statistical Methods 1	3
FDSC 305	Food Chemistry 2	3
Term 4		
ANSC 424	Metabolic Endocrinology	3
NUTR 337	Nutrition Through Life	3
NUTR 344	Clinical Nutrition 1	4
Term 5		
NUTR 420	Toxicology and Health Risks	3
NUTR 450	Research Methods: Human Nutrition	3
NUTR 451	Analysis of Nutrition Data	3
NUTR 512	Herbs, Foods, and Phytochemicals	3
Complementary Courses:		**15/16**
One of the following courses:		**3**
NUTR307	Human Nutrition	
or ANSC330	Fundamentals of Nutrition	
And one of the following sets of 12/13 credits.		**12/13**
Nutritional Biochemistry:		**13**
ANSC551	Carbohydrate & Lipid Metabolism	3
ANSC552	Protein Metabolism & Nutrition	3
CELL204	Genetics	4
PARA438	Immunology	3
Global Nutrition:		**12**
AGRI340	Principles of Ecological Agriculture	3
NRSC340	Global Perspectives on Food	3
NUTR403	Nutrition in Society	3
NUTR501	Nutrition in Developing Countries	3
Food Function and Safety:		**12**
FDSC300	Food Analysis 1	3
FDSC315	Food Analysis 2	3
FDSC319	Food Chemistry 3	3
FDSC425	Principles of Quality Assurance	3
Sports Nutrition:		**12**
ANAT214	Systemic Human Anatomy	3
or EDKP205	Structural Anatomy	3
EDKP391	Physiology in Sport & Exercise	3
EDKP495	Scientific Principles of Training	3
NUTR503	Bioenergetics and the Life Span	3

MINOR IN HUMAN NUTRITION

Academic Adviser: Linda Wykes, Ph.D.

The Minor in 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 for the Human Nutrition Minor in the School of Dietetics and Human Nutrition to obtain approval for their course selection. Since some courses may not be offered every year and many have prerequisites, students are cautioned to plan their program in advance.

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

Required Courses: 6 credits
Complementary Courses: 18 or 19 credits

		CREDITS
Required Courses:		**6**
NUTR337	Nutrition Through Life	3
NUTR450	Research Methods: Human Nutrition	3
Complementary Courses:		**18 or 19**

3 credits in biochemistry, one of:

ANSC234	(3)	Biochemistry 2
BIOC311	(3)	Metabolic Biochemistry

3 or 4 credits in physiology, one of:

ANSC323	(4)	Mammalian Physiology
PHGY210	(3)	Mammalian Physiology 2
PHGY202	(3)	Human Physiology: Body Functions

3 credits in nutrition, one of:

ANSC330	(3)	Fundamentals of Nutrition
NUTR307	(3)	Human Nutrition

8 or 9 credits from the following list:

ANSC551	(3)	Carbohydrate and Lipid Metabolism
ANSC552	(3)	Protein Metabolism and Nutrition
MIMM314	(3)	Immunology
orPARA438	(3)	Immunology
NUTR403	(3)	Nutrition in Society
NUTR451	(3)	Analysis of Nutrition Data
NUTR436	(2)	Nutritional Assessment
NUTR420	(3)	Toxicology and Health Risks
NUTR512	(3)	Herbs, Foods and Phytochemicals
NUTR501	(3)	Nutrition in Developing Countries
NUTR430	(3)	Directed Studies: Dietetics and Nutrition 1
or NUTR431	(3)	Directed Studies: Dietetics and Nutrition 2
PATH300	(3)	Human Disease

Notes:

1. Most courses listed at the 300level and higher have prerequisites. Although instructors may waive prerequisite(s) in some cases, students are urged to prepare their program of study well before their final year.
2. Some courses may not be offered every year. For information on available courses, consult Class Schedule at www.mcgill.ca/minerva; complete listings can be found in the Courses section of this Calendar.

13.6.5 Department of Food Science and Agricultural Chemistry

Macdonald Stewart Building – Room MS1-034
Telephone: (514) 398-7898
Fax: (514) 398-7977
E-mail: foodscience.macdonald@mcgill.ca
Website: agrenv.mcgill.ca/foodscience

Chair — William D. Marshall

Professors — Inteaz Alli, William D. Marshall, HosahalliS.Ramaswamy, James P.Smith, FrederikR.vandeVoort

Associate Professors — Ashraf A.Ismail, Selim Kermasha, BenjaminK.Simpson, VaroujanYaylayan

Adjunct Professors — John W. Austin, Byong H. Lee, YasuoKonishi, Michèle Marcotte, AndréMorin, J.R.JocelynParé

FOOD SCIENCE MAJOR

Note: Admission to the program is presently suspended. The program is undergoing revision. Students in course will follow the program outlined in the 2004-2005 calendar.

13.6.6 Department of Natural Resource Sciences

Macdonald Stewart Building – Room MS3-040
Telephone: (514) 398-7890
Fax: (514) 398-7990
E-mail: info@nrs.mcgill.ca
Website: www.mcgill.ca/nrs

Chair — Benoît Côté

Emeritus Professors — A. Clark Blackwood, Roger Knowles, Angus F. Mackenzie, Robert A. MacLeod, PeterH.Schuepp, RobinK.Stewart

Professors — David M. Bird, Peter Brown *(joint appoint. with Geography and McGill School of Environment),* JamesW.Fyles *(Tomlinson-Fowler Professor of Forest Ecology)*, WilliamH.Hendershot

Associate Professors — Benoît Côté, Mark A. Curtis, BrianT.Driscoll, GaryB.Dunphy, DavidJ.Lewis, GuyR.Mehuys, DonaldF.Niven, Manfred E. Rau, RodgerD.Titman, Terry A. Wheeler, Lyle Whyte

Assistant Professors — Christopher Buddle, MurrayHumphries, IanStrachan, JoannWhalen

Curators — Stephanie Boucher, Christina Idziak

Associate Members — Laurie Chan *(School of Dietetics and Human Nutrition),* David Green *(Redpath Museum),* WilliamD.Marshall *(Dept. of Food Science and Agricultural Chemistry)*, Greg T. Matlashewski *(Dept. of Microbiology and Immunology)*, Donald L. Smith *(Dept. of Plant Science)*

Adjunct Professors — Robert Anderson, Frederick S. Archibald, Suzanne Beauchemin, DominiqueBerteaux, GuyBoivin, Jeffrey Cumming, CharlesW.Greer, Thomas Herman, CarlosMiguez, ElizabethPattey, Husain Sadar, Jean-PierreSavard, AntonScheuhammer, Geoffrey Sunahara, CharlesVincent

APPLIED ZOOLOGY MAJOR

Academic Advisers: Professor T. A. Wheeler (U1, U3), C. Buddle (U2)

The great diversity of animals form the focus of this Major, from the invertebrates, with their many beneficial and pest insects, to vertebrates, including fish and wildlife. The interaction of animals with each other and with human populations is stressed. By careful course selection students may emphasize life in soils or water, entomology, physiology, parasitology or vertebrate biology and ecology. Career opportunities exist in both the public and private sectors in research, program development and implementation, pest control, wildlife management, etc.

Required Courses: 27 credits
Complementary Courses: 36 credits
Electives: To meet the minimum credit requirement for the degree.

		CREDITS
Required Courses:		**27**
AEBI202	Cellular Biology	3
AEMA310	Statistical Methods 1	3
CELL204	Genetics	4
FDSC211	Biochemistry 1	3
NRSC491	Scientific Communication 1	1
NRSC492	Scientific Communication 2	1
PLNT201	Comparative Plant Biology	3
WILD200	Comparative Zoology	3
WILD205	Principles of Ecology	3
WILD212	Evolution and Systematics	3
Complementary Courses:		**36**
36 credits in any combination from List A, B and/or C		36

List A (Animal Diversity)

BIOL327[1]	(3)	Herpetology
BIOL351[1]	(3)	The Biology of Invertebrates
MICR230	(3)	Introductory Microbiology
WILD307	(3)	Natural History of Vertebrates
WILD350	(3)	Mammalogy
WILD420	(3)	Ornithology
WILD424	(3)	Parasitology

List B (Entomology)

ENTO330	(3)	Insect Biology
ENTO336	(3)	Economic Entomology
ENTO352	(3)	Control of Insect Pests
ENTO425	(3)	Insect Ecology
ENTO440	(3)	Systematic Entomology
ENTO515	(3)	Parasitoid Behavioural Ecology
ENTO520	(3)	Insect Physiology
ENTO535	(3)	Aquatic Entomology
ENTO550	(3)	Veterinary and Medical Entomology

List C (Interactions and Applications)

BIOL331[1]	(3)	Ecology/Behaviour Field Course
BIOL465[1]	(3)	Conservation Biology
NRSC315	(3)	Science of Inland Waters
NRSC497	(2)	Research Project 1
NRSC498	(3)	Research Project 2
PLNT358	(3)	Flowering Plant Diversity
SOIL335	(3)	Soil Ecology and Management
WILD311	(3)	Ethology
WILD313	(3)	Phylogeny and Zoogeography
WILD401	(4)	Fisheries and Management
WILD410	(3)	Wildlife Ecology

[1] Downtown Campus

MACDONALD SUMMER FIELD COURSE:

One course is available during Summer Session that provides students the opportunity to participate in supervised field research concerning flora and fauna not easily studied at other times of the year, and to apply knowledge from the classroom to environmental issues in the field.

NRSC384 (3) Field Research Project

For more information, please consult the *McGill Summer Studies Calendar*, the Summer Studies Website at www.mcgill.ca/summer, or the Faculty Website at www.agrenv.mcgill.ca/envschool.

ENVIRONMENTAL BIOLOGY MAJOR

Academic Advisers: Professors M.E. Rau(U1), I. Strachan (U2, U3)

This program provides scientists with basic knowledge in Biology and strong emphasis in Ecology. As ecologists they will be equipped to investigate the scientific aspects of the relationships between organisms and their environment.

Required Courses: 27 credits
Complementary Courses: 30 credits
Electives: To meet the minimum credit requirement for the degree.

		CREDITS
Required Courses:		**27**
AEBI202	Cellular Biology	3
AEMA310	Statistical Methods 1	3
CELL204	Genetics	4
FDSC211	Biochemistry 1	3
NRSC491	Scientific Communication 1	1
NRSC492	Scientific Communication 2	1
PLNT201	Comparative Plant Biology	3
WILD200	Comparative Zoology	3
WILD205	Principles of Ecology	3
WILD375	Issues: Environmental Sciences	3

Complementary Courses: **30**

a minimum of 30 credits selected from the following list in consultation with the Academic Adviser

AEMA306	(3)	Mathematical Methods in Ecology
MICR230	(3)	Introductory Microbiology
MICR331	(3)	Microbial Ecology
NRSC201	(3)	Introductory Meteorology
NRSC315	(3)	Science of Inland Waters
NRSC333	(3)	Physical and Biological Aspects of Pollution
NRSC437	(3)	Assessing Environmental Impact
NRSC497	(2)	Research Project 1
NRSC498	(3)	Research Project 2
NUTR420	(3)	Toxicology and Health Risks
PLNT358	(3)	Flowering Plant Diversity
PLNT460	(3)	Plant Ecology
SOIL200	(3)	Introduction to Earth Science
SOIL210	(3)	Principles of Soil Science
SOIL335	(3)	Soil Ecology and Management
WILD307	(3)	Natural History of Vertebrates
WILD311	(3)	Ethology
WILD313	(3)	Phylogeny and Zoogeography
WILD401	(4)	Fisheries and Wildlife Management
WILD410	(3)	Wildlife Ecology
WILD475	(3)	Desert Ecology
WOOD410	(3)	The Forest Ecosystem
WOOD420	(3)	Environmental Issues: Forestry

With the permission of the Academic Adviser and the Committee on Academic Standing, ecological or environmental courses offered on the Downtown Campus may be substituted for those appearing in the above list of Complementary Courses.

MICROBIOLOGY MAJOR

Academic Advisers: Professors B. Driscoll (U1), D.Niven (U2, U3)

Students receive training in fundamental principles and applied aspects of Microbiology, choosing one of the three options: Biotechnology, Ecology or Environment. Successful graduates are competent to work in university, government and industrial research laboratories and in the pharmaceutical, fermentation and food industries.

Required Courses: 51 credits
Complementary Courses: 12 credits, chosen from one option (Biotechnology or Ecology or Environment)
Electives: To meet the minimum credit requirement for the degree.

		CREDITS
Required Courses:		**51**
AEBI202	Cellular Biology	3
AEMA310	Statistical Methods 1	3
CELL204	Genetics	4
FDSC211	Biochemistry 1	3
MICR230	Introductory Microbiology	3
MICR300	Microbial Physiology Laboratory	3
MICR311	Microbiology Seminar 1	1
MICR331	Microbial Ecology	3
MICR338	Bacterial Molecular Genetics	3
MICR341	Mechanisms of Pathogenicity	3
MICR412	Microbiology Seminar 2	1
MICR450	Environmental Microbiology	3
MICR481	Microbiology Project 1	3
MICR482	Microbiology Project 2	3
PARA438	Immunology	3
PLNT304	Biology of Fungi	3
PLNT424	Cellular Regulation	3
WILD424	Parasitology	3

Complementary Courses (12 credits) **12**

12 credits taken from one of the three options listed below: Biotechnology, Ecology, Environment

Biotechnology

12 credits chosen from the following list of courses:

AEBI306	(3)	Experiments in Biotechnology
AGEC200	(3)	Principles of Microeconomics
ANSC400	(3)	Eukaryotic Cells and Viruses
ANSC420	(3)	Animal Biotechnology
BIOT505	(3)	Selected Topics in Biotechnology
BTEC501	(3)	Bioinformatics
CELL500	(3)	Techniques Plant Molecular Genetics
CELL501	(3)	Plant Molecular Biology and Genetics
ENTO352	(3)	Control of Insect Pests
FDSC535	(3)	Food Biotechnology

Ecology

12 credits chosen from the following list of courses:

AEMA306	(3)	Mathematical Methods in Ecology
ENTO330	(3)	Insect Biology
PLNT201	(3)	Comparative Plant Biology
PLNT305	(3)	Plant Pathology
SOIL210	(3)	Principles of Soil Science
SOIL335	(3)	Soil Ecology and Management
WILD200	(3)	Comparative Zoology
WILD205	(3)	Principles of Ecology
WILD212	(3)	Evolution and Systematics
WOOD410	(3)	The Forest Ecosystem

Environment

12 credits chosen from the following list of courses:

ENVR200	(3)	The Global Environment
ENVR201	(3)	Society and Environment
ENVR202	(3)	The Evolving Earth
ENVR203	(3)	Knowledge, Ethics and Environment
EPSC205	(3)	Astrobiology
NRSC201	(3)	Introductory Meteorology
NRSC333	(3)	Physical and Biological Aspects of Pollution
NUTR420	(3)	Toxicology and Health Risks
PARA410	(3)	Environment and Infection
WILD375	(3)	Issues: Environmental Sciences

RESOURCE CONSERVATION MAJOR

Academic Adviser: Professor B. Côté

The Major prepares students to deal with problems in integrated resource management and environmental protection with the objective of making optimal use of natural resources under any given set of economic, social and ecological conditions. Students follow a series of required courses and select complementary

courses on physical, biological, soil and aquatic resources from approved lists on each of these themes.

Required Courses: 26 credits
Complementary Courses: 33 credits
Electives: To meet the minimum credit requirement for the degree.

		CREDITS
Required Courses:		**26**
AGEC200	Principles of Microeconomics	3
AGEC333	Resource Economics	3
FDSC211	Biochemistry 1	3
NRSC315	Science of Inland Waters	3
NRSC437	Assessing Environmental Impact	3
NRSC491	Scientific Communication 1	1
NRSC492	Scientific Communication 2	1
SOIL200	Introduction to Earth Science	3
SOIL210	Principles of Soil Science	3
WILD205	Principles of Ecology	3
Complementary Courses:		**33**
A minimum of 33 credits selected from the following list in consultation with the Academic Adviser		
AEMA310 (3)	Statistical Methods 1	3
or MATH203[1] (3)	Principles of Statistics 1	
PLNT201 (3)	Comparative Plant Biology	3
or PLNT211 (3)	Principles of Plant Science	
At least two of the following:		6
BREE214 (3)	Geomatics	
BREE217 (3)	Hydrology and Water Resources	
or GEOG322[1] (3)	Environmental Hydrology	
BREE416 (3)	Engineering for Land Development	
NRSC201 (3)	Introductory Meteorology	
NRSC333 (3)	Physical and Biological Aspects of Pollution	
At least three of the following:		9 or 10
AEMA306 (3)	Mathematical Methods in Ecology	
BIOL465[1] (3)	Conservation Biology	
MICR331 (3)	Microbial Ecology	
PLNT358 (3)	Flowering Plant Diversity	
SOIL335 (3)	Soil Ecology and Management	
WILD401 (4)	Fisheries and Wildlife Management	
WOOD410 (3)	The Forest Ecosystem	
At least three of the following:		9
AGRI435 (3)	Soil and Water Quality Management	
SOIL315 (3)	Soil Fertility and Fertilizer Use	
SOIL326 (3)	Soil Genesis and Classification	
SOIL331 (3)	Soil Physics	
SOIL410 (3)	Soil Chemistry	
SOIL521 (3)	Soil Microbiology and Biochemistry	
At least one of the following:		3
GEOG201[1] (3)	Introductory Geo-Information Science	
BREE430 (3)	GIS for Biosystems Engineering	
WILD310 (3)	Air Photo and Imagery Interpretation	

[1] Downtown Campus

Note: Other courses on the Downtown Campus may be equivalent to some required courses; consult the Academic Adviser. Course substitutions must be approved by the Committee on Academic Standing.

WILDLIFE BIOLOGY MAJOR

Academic Advisers: Professors M. Humphries (U1), R.Titman (U2), M.Curtis (U3)

This program emphasizes understanding the ecology of vertebrate animals, their biological and physical environment and the interactions that are important in the management of ecological communities and wildlife species. Employment opportunities exist in resource planning, nature interpretation, wildlife management and environmental impact assessment. By careful course selection students may meet requirements for certification by the Wildlife Society.

Required Courses: 37 credits
Complementary Courses: 27 credits
Electives: To meet the minimum credit requirement for the degree.

		CREDITS
Required Courses:		**37**
AEMA310	Statistical Methods 1	3
CELL204	Genetics	4
FDSC211	Biochemistry 1	3
NRSC491	Scientific Communication 1	1
NRSC492	Scientific Communication 2	1
PLNT201	Comparative Plant Biology	3
PLNT358	Flowering Plant Diversity	3
WILD200	Comparative Zoology	3
WILD205	Principles of Ecology	3
WILD212	Evolution and Systematics	3
WILD307	Natural History of Vertebrates	3
WILD401	Fisheries and Wildlife Management	4
WILD410	Wildlife Ecology	3
Complementary Courses:		**27**
9 credits from List A (Organismal Biology)		
BIOL327 (3)	Herpetology	
WILD311 (3)	Ethology	
WILD350 (3)	Mammalogy	
WILD420 (3)	Ornithology	
WILD424 (3)	Parasitology	
18 credits from List B (Integration and Applications)		
AEMA306 (3)	Mathematical Methods in Ecology	
AGEC333 (3)	Resource Economics	
ANSC323 (4)	Mammalian Physiology	
BIOL465 (3)	Conservation Biology	
NRSC315 (3)	Science of Inland Waters	
NRSC437 (3)	Assessing Environmental Impact	
NRSC497 (2)	Research Project 1	
NRSC498 (3)	Research Project 2	
NUTR420 (3)	Toxicology and Health Risks	
PLNT460 (3)	Plant Ecology	
WILD313 (3)	Phylogeny and Zoogeography	
WILD382 (3)	Fish and Wildlife Propagation	
WILD415 (2)	Conservation Law	
WILD421 (3)	Wildlife Conservation	
WILD475 (3)	Desert Ecology	
WOOD410 (3)	The Forest Ecosystem	
WOOD441 (3)	Integrated Forest Management	

13.6.7 Department of Plant Science

Raymond Building – Room R2-019
Telephone: (514) 398-7851
Fax: (514) 398-7897
E-mail: plant.science@mcgill.ca
Website: www.mcgill.ca/plant

Chair — Donald L. Smith

Emeritus Professors — RalphH. Estey, William F.Grant, HowardA. Steppler

Professors — DeborahJ. Buszard, PierreDutilleul, DianeE.Mather, DonaldL.Smith, AlanK.Watson

Associate Professors — Danielle J. Donnelly, Marc Fortin *(William Dawson Scholar)*, Suha J.-Hare, AjjamadaC.Kushalappa, KatrineA.Stewart , MarciaJ. Waterway

Assistant Professors — Jacqueline C. Bede, Sylvie de Blois, Philippe Seguin, Martina V. Stromvik

Faculty Lecturers — Caroline Begg, Serge Lussier, KatherineMcClintock, DavidWees

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

Adjunct Professors — ToddCapson, SylvieJenni, Jean-François Laliberté, Louise O'Donoughue

The Department of Plant Science offers Majors in Botanical Science and Plant Science, and participates in administering Majors in Agricultural Sciences and the Environmetrics and Food Production and Environment Domains of the McGill School of Environment.

BOTANICAL SCIENCE MAJOR

Academic Adviser: Professor S. de Blois
E-mail: sylvie.deblois@mcgill.ca

The Botanical Science Major offers two options for those interested in working with plants, one emphasizing the ecology of plants and their environment and the other emphasizing the physiology and molecular biology of plants. The Ecology Option emphasizes ecology, conservation, and environmental sciences. The Molecular Option emphasizes molecular genetics, plant improvement, and biotechnology. These two options form botanists prepared for exciting careers in the knowledge economy.

Graduates find employment within private industry, government services, consulting, teaching, or go on to do postgraduate research. These programs can be completed entirely on the Macdonald Campus or one term can be spent taking courses on the Downtown Campus during the final year.

Required Courses: 42 credits
Complementary Courses: 18 credits, selected from an approved list in consultation with the Academic Adviser; taken in either the Ecology or the Molecular Option.
Electives: To meet the minimum credit requirement for the degree.

Note: Courses marked with an asterisk (*) are offered on the downtown campus.

		CREDITS
Required Courses:		**42**
AEBI202	Cellular Biology	3
AEMA310	Statistical Methods 1	3
CELL204	Genetics	4
FDSC211	Biochemistry 1	3
PLNT201	Comparative Plant Biology	3
PLNT220	Introduction to Vascular Plants	1
PLNT221	Introduction to Fungi	1
PLNT353	Plant Structure and Function	4
PLNT358	Flowering Plant Diversity	3
PLNT458	Flowering Plant Systematics	3
PLNT460	Plant Ecology	3
PLNT489	Project Planning and Proposal	1
PLNT490	Research Project	2
PLNT495	Seminar 1	1
PLNT496	Seminar 2	1
WILD200	Comparative Zoology	3
WILD205	Principles of Ecology	3

Complementary Courses **18**
Either the Ecology Option
or the Molecular Option

Ecology Option: **18**
at least 12 credits must be chosen from the following:

AEMA306	(3)	Mathematical Methods in Ecology
AGRI340	(3)	Principles of Ecological Agriculture
*BIOL324	(3)	Ecological Genetics
*BIOL331	(3)	Ecology/Behaviour Field Course
*BIOL334	(3)	Applied Tropical Ecology
*BIOL465	(3)	Conservation Biology
*BIOL483	(3)	Stat. Approaches in Ecology and Evolution
*GEOG350	(3)	Ecological Biogeography
MICR331	(3)	Microbial Ecology
NRSC315	(3)	Science of Inland Waters
NRSC437	(3)	Assessing Environmental Impact
WILD415	(2)	Conservation Law
WOOD410	(3)	The Forest Ecosystem
WOOD420	(3)	Environmental Issues: Forestry

the remaining credits, if any, to be chosen from the Molecular Option or the General Complementary Course lists.

Molecular Option: **18**
at least 12 credits must be chosen from the following:

AEBI306	(3)	Experiments in Biotechnology
ANSC400	(3)	Eukaryotic Cells and Viruses
*BIOL301	(4)	Laboratory in Molecular and Cellular Biology
*BIOL303	(3)	Developmental Biology
*BIOL333	(3)	Plant Biotechnology
BTEC501	(3)	Bioinformatics
CELL500	(3)	Techniques Plant Molecular Genetics
CELL501	(3)	Plant Molecular Biology and Genetics
FDSC212	(2)	Biochemistry Laboratory
MICR200	(3)	Laboratory Methods in Microbiology
MICR230	(3)	Introductory Microbiology
MICR338	(3)	Bacterial Molecular Genetics
PLNT424	(3)	Cellular Regulation
PLNT525	(3)	Advanced Micropropagation
PLNT535	(3)	Plant Breeding

the remaining credits, if any, to be chosen from the Ecology Option or the General Complementary Course lists.

General Complementary Courses:

*BIOL555	(3)	Functional Ecology of Trees
NUTR512	(3)	Herbs, Foods and Phytochemicals
PLNT215	(1)	Orientation in Plant Science
PLNT304	(3)	Biology of Fungi
PLNT305	(3)	Plant Pathology
PLNT310	(3)	Plant Propagation
PLNT434	(3)	Weed Biology and Control
PLNT450	(2)	Special Topics: Plant Science
PLNT451	(3)	Special Topics: Plant Science 2
SOIL210	(3)	Principles of Soil Science

PLANT SCIENCE MAJOR

Academic Adviser: ProfessorJ. Bede
E-mail: jacqueline.bede@mcgill.ca

The Plant Science Major offers intensive training in agricultural plant science. Comprehensive studies are offered in all aspects of biology and production practices related to important crop plant species. Studies include laboratory, greenhouse, and field exposure relating to agronomic, horticultural, or field crop development, production and management.

Graduates are eligible to apply for membership in the Ordre des agronomes du Québec (OAQ) and the Agricultural Institute of Canada (AIC). Graduates rapidly find employment in agricultural industries, government services, extension, consulting, teaching, or go on to do postgraduate research.

Required Courses: 49 credits
Complementary Courses: 18 credits
Electives: To meet the minimum credit requirement for the degree.

		CREDITS
Required Courses:		**49**
AEMA310	Statistical Methods 1	3
AGEC200	Principles of Microeconomics	3
ANSC250	Principles of Animal Science	3
CELL204	Genetics	4
FDSC211	Biochemistry 1	3
MICR230	Introductory Microbiology	3
PLNT211	Principles of Plant Science	3
PLNT300	Cropping Systems	3
PLNT305	Plant Pathology	3

PLNT310	Plant Propagation	3
PLNT353	Plant Structure and Function	4
PLNT358	Flowering Plant Diversity	3
PLNT434	Weed Biology and Control	3
PLNT495	Seminar 1	1
PLNT496	Seminar 2	1
SOIL210	Principles of Soil Science	3
SOIL315	Soil Fertility and Fertilizer Use	3

Complementary Courses: **18**

at least one of:

BREE300	(3)	Elements of Agricultural Engineering
ENTO452	(3)	Control of Insect Pests

A minimum of 3 credits selected from the following list:

AGEC231	(3)	Economic Systems of Agriculture
AGEC320	(3)	Economics of Agricultural Production
AGEC331	(3)	Farm Business Management
AGEC350	(3)	Agricultural Finance

plus a minimum of 12 credits selected from the course list given below:

FDSC310	(3)	Post Harvest Fruit and Vegetable Technology
PLNT215	(1)	Orientation in Plant Science
PLNT220	(1)	Introduction to Vascular Plants
PLNT221	(1)	Introduction to Fungi
PLNT322	(3)	Greenhouse Management
PLNT331	(3)	Field Crops
PLNT341	(1)	Horticulture - The Alliums
PLNT342	(1)	Horticulture - Cole Crops
PLNT343	(1)	Horticulture - Root Crops
PLNT344	(1)	Horticulture - Salad Crops
PLNT345	(1)	Horticulture - Solanaceous Crops
PLNT346	(1)	Horticulture - Temperate Fruits
PLNT347	(1)	Horticulture - Small Fruits
PLNT348	(1)	The Brassicas
PLNT421	(3)	Landscape Plant Materials
PLNT460	(3)	Plant Ecology
PLNT535	(3)	Plant Breeding

MINOR IN AGRICULTURAL PRODUCTION

Academic Adviser: Professor K. A. Stewart
E-mail: Katrine.Stewart@mcgill.ca

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 90credits 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 in Agricultural Production. With the agreement of their Major Program adviser they must submit their program of courses already taken, and to be taken in their final year, to the Academic Adviser of the Agricultural Production Minor. The Academic Adviser of the Agricultural Production Minor will then certify which courses the student will apply toward the Minor and that the student's program conforms with the requirements of the Minor.

General Regulations

To obtain a Minor in Agricultural Production, students must:

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

b) offer a minimum total of 24credits from the courses as given below, of which not more than 6credits 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
Complementary Courses: 12 credits

		CREDITS
Required Courses:		**12**
ANSC250	Principles of Animal Science	3
PLNT211	Principles of Plant Science	3
PLNT300	Cropping Systems	3
SOIL210	Principles of Soil Science	3
Complementary Courses:		**12**

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

ANSC450	(3)	Dairy Cattle Production
ANSC452	(3)	Beef Cattle and Sheep Production
ANSC454	(3)	Swine Production
ANSC456	(3)	Poultry Production
PLNT331	(3)	Field Crops
PLNT341	(1)	Horticulture - The Alliums
PLNT342	(1)	Horticulture - Cole Crops
PLNT343	(1)	Horticulture - Root Crops
PLNT344	(1)	Horticulture - Salad Crops
PLNT345	(1)	Horticulture - Solanaceous Crops
PLNT346	(1)	Horticulture - Temperate Fruits
PLNT347	(1)	Horticulture - Small Fruits
PLNT348	(1)	The Brassicas

Notes:

1. Most courses listed at the 300level and higher have prerequisites. Although instructors may waive prerequisite(s) in some cases, students are urged to prepare their program of study well before their final year.
2. Not all courses are offered every year. For information on available courses, consult Class Schedule at www.mcgill.ca/minerva; complete listings can be found in the Courses section of this Calendar.

13.6.8 Interdisciplinary Studies

Ecological Agriculture Program
Telephone: (514) 398-7928
Website: www.agrenv.mcgill.ca/agrecon/ecoagr

MINOR IN ECOLOGICAL AGRICULTURE

Academic Adviser: Professor J. Henning

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

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, 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 the requirements of the Minor.

General Regulations

To obtain a Minor in Ecological Agriculture, students must:

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

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

Required Courses: 9 credits
Complementary Courses: 15 credits

		CREDITS
Required Courses:		**9**
AGRI210	Agro-Ecological History	3
AGRI340	Principles of Ecological Agriculture	3
AGRI341	Ecological Agriculture Systems	3
Complementary Courses:		**15**
15 credits chosen from the following, in consultation with the Academic Adviser for Ecological Agriculture		
with at least 3 credits chosen from:		3-6
SOIL335	(3) Soil Ecology and Management	
SOIL445	(3) Agroenviron. Fertilizer Use	
and the remaining credits to be chosen from:		9-12
AGEC333	(3) Resource Economics	
AGRI435	(3) Soil and Water Quality Management	
AGRI491D1	(1.5) Co-op Experience	
AGRI491D2	(1.5) Co-op Experience	
ENTO352	(3) Control of Insect Pests	
MICR331	(3) Microbial Ecology	
NUTR512	(3) Herbs, Foods and Phytochemicals	
PLNT300	(3) Cropping Systems	
PLNT361	(3) Pest Management and the Environment	
PLNT434	(3) Weed Biology and Control	
PLNT460	(3) Plant Ecology	
RELG270	(3) Religious Ethics and the Environment	
WILD205	(3) Principles of Ecology	
WILD311	(3) Ethology	
WILD375	(3) Issues: Environmental Sciences	
WOOD410	(3) The Forest Ecosystem	

CERTIFICATE IN ECOLOGICAL AGRICULTURE

Academic Adviser: Professor J. Henning

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 wish 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 in Ecological Agriculture are not permitted to register for this program.

General Regulations
To obtain a Certificate in Ecological Agriculture, students must offer a minimum total of 30 credits from the courses as given below.

Required Courses: 9 credits
Complementary Courses: 21 credits

		CREDITS
Required Courses:		**9**
AGRI210	Agro-Ecological History	3
AGRI340	Principles of Ecological Agriculture	3
AGRI341	Ecological Agriculture Systems	3
Complementary Courses:		**21**
21 credits chosen from the following, in consultation with the Academic Adviser for Ecological Agriculture		
with at least 3 credits chosen from:		3-6
SOIL335	(3) Soil Ecology and Management	
SOIL445	(3) Agroenviron. Fertilizer Use	
and the remaining credits to be chosen from:		15-18
AGEC333	(3) Resource Economics	
AGRI435	(3) Soil and Water Quality Management	
AGRI491D1	(1.5) Co-op Experience	
AGRI491D2	(1.5) Co-op Experience	
ENTO352	(3) Control of Insect Pests	
MICR331	(3) Microbial Ecology	
NUTR512	(3) Herbs, Foods and Phytochemicals	
PLNT300	(3) Cropping Systems	
PLNT361	(3) Pest Management and the Environment	
PLNT434	(3) Weed Biology and Control	
PLNT460	(3) Plant Ecology	
RELG270	(3) Religious Ethics and the Environment	
WILD205	(3) Principles of Ecology	
WILD311	(3) Ethology	
WILD375	(3) Issues: Environmental Sciences	
WOOD410	(3) The Forest Ecosystem	

Notes:
1. Most courses listed at the 300level 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. Not all courses are offered every year. For information on available courses, consult Class Schedule at www.mcgill.ca/minerva; complete listings can be found in the Courses section of this Calendar.
3. Students using AGRI491D1/AGRI491D2 towards the requirements of the Certificate/Minor are limited to an experience on farms or other enterprises that are either organic, biodynamic, or practicing permaculture. The placement must be approved by the academic adviser for the Certificate/Minor.
4. SOIL521 is an alternate year course.

AGRICULTURAL SCIENCES MAJORS

Academic Adviser: Katherine McClintock
Department of Plant Science
Telephone: (514) 398-7940

The Agricultural Sciences Majors are designed to provide students with a broad appreciation of the scientific and applied aspects of modern agriculture and the flexibility to pursue individual interests.

During the summer months, students can gain valuable practical field experience (and obtain additional course credit) in the Agricultural Sciences Internship Major.

Both majors consist of a similar core of required courses that confer eligibility to apply for membership in the Ordre des agronomes du Québec and other provincial institutes of agrology.

Students in the Agricultural Sciences Majors can enrol in the General Option, or obtain more specialized experience by selecting the Ecological Agriculture, International Agriculture, Soil Science or Agricultural Biotechnology Options.

AGRICULTURAL SCIENCES MAJOR – GENERAL OPTION
(90credits)

Required Courses: 52 credits
Complementary Courses: 19 credits
Electives: To meet the minimum credit requirement for the degree.

		CREDITS
Required Courses:		**52**
BREE300	Elements of Agricultural Engineering	3
AEMA310	Statistical Methods 1	3
AGEC200	Principles of Microeconomics	3
AGEC231	Economic Systems of Agriculture	3
AGRI210	Agro-Ecological History	3
AGRI220	Professional Practice Seminar 1	0.5
AGRI221	Professional Practice Seminar 2	0.5
AGRI320	Professional Practice Seminar 3	0.5
AGRI321	Professional Practice Seminar 4	0.5
AGRI420	Professional Practice Seminar 5	0.5
AGRI421	Professional Practice Seminar 6	0.5
AGRI490	Agri-Food Industry Project	3
ANSC250	Principles of Animal Science	3
CELL204	Genetics	4

ENTO352	Control of Insect Pests	3
FDSC211	Biochemistry 1	3
MICR230	Introductory Microbiology	3
PLNT211	Principles of Plant Science	3
PLNT300	Cropping Systems	3
RELG270	Religious Ethics and the Environment	3
SOIL210	Principles of Soil Science	3
SOIL315	Soil Fertility and Fertilizer Use	3

Complementary Courses: **19**

at least one of:

ANSC323	(4)	Mammalian Physiology
PLNT353	(4)	Plant Structure and Function

at least one production course in Agricultural Science:

AGEC331	(3)	Farm Business Management
ANSC450	(3)	Dairy Cattle Production
ANSC452	(3)	Beef Cattle and Sheep Production
ANSC454	(3)	Swine Production
ANSC456	(3)	Poultry Production
PLNT331	(3)	Field Crops

plus a minimum of 12 credits chosen in consultation with the Academic Adviser from courses with Subject Codes BREE, AGEC, AGRI, ANSC, ENTO, NRSC, PLNT, and SOIL.

AGRICULTURAL SCIENCES INTERNSHIP MAJOR – GENERAL OPTION (96credits)

Required Courses: 64 credits
Complementary Courses: 19 credits
Electives: To meet the minimum credit requirement for the degree.

	CREDITS
Required Courses:	**64**
All of the required courses (52 credits) specified for the Agricultural Sciences Major – General Option, with the addition of:	
AGRI201D1 Agri-Environment Internship	3
AGRI201D2 Agri-Environment Internship	3
AGRI301D1 Agrology Internship	3
AGRI301D2 Agrology Internship	3
Complementary Courses:	**19**
As described for the Agricultural Sciences Major – General Option.	

AGRICULTURAL SCIENCES MAJOR – AGRICULTURAL BIOTECHNOLOGY OPTION (90 credits)

Required Courses: 61 credits
Complementary Courses: 16 credits
Electives: To meet the minimum credit requirement for the degree

	CREDITS
Required Courses:	**61**
All of the required courses (52 credits) specified for the Agricultural Sciences Major – General Option, with the addition of:	
AEBI202 Cellular Biology	3
MICR338 Bacterial Molecular Genetics	3
PARA400 Eukaryotic Cells and Viruses	3
Complementary Courses:	**16**

at least one of:

ANSC323	(4)	Mammalian Physiology
PLNT353	(4)	Plant Structure and Function

at least one production course in Agricultural Science:

AGEC 331	(3)	Farm Business Management
ANSC 450	(3)	Dairy Cattle Production
ANSC 452	(3)	Beef Cattle and Sheep Production
ANSC 454	(3)	Swine Production
ANSC 456	(3)	Poultry Production
PLNT 331	(3)	Field Crops

and a minimum of 9 credits chosen from the following:

AEBI 306	(3)	Experiments in Biotechnology
ANSC 420	(3)	Animal Biotechnology
ANSC 504	(3)	Population Genetics
ANSC 508	(3)	Tools in Animal Biotechnology
BTEC 501	(3)	Bioinformatics
BTEC 502	(3)	Biotechnology Ethics and Society
CELL 500	(3)	Techniques in Plant Molecular Genetics
CELL 501	(3)	Plant Molecular Biology and Genetics
FDSC 535	(3)	Food Biotechnology
PLNT 424	(3)	Cellular Regulation
PLNT 535	(3)	Plant Breeding

AGRICULTURAL SCIENCES INTERNSHIP MAJOR – AGRICULTURAL BIOTECHNOLOGY OPTION (96 credits)

Required Courses: 73 credits
Complementary Courses: 16 credits
Electives: To meet the minimum credit requirement for the degree.

	CREDITS
Required Courses:	**73**
All of the required courses (61 credits) specified for the Agricultural Sciences Major – Agricultural Biotechnology Option, with the addition of:	
AGRI201D1 Agri-Environment Internship	3
AGRI201D2 Agri-Environment Internship	3
AGRI301D1 Agrology Internship	3
AGRI301D2 Agrology Internship	3
Complementary Courses:	**16**
As described for the Agricultural Sciences Major – Agricultural Biotechnology Option.	

AGRICULTURAL SCIENCES MAJOR – ECOLOGICAL AGRICULTURE OPTION (90credits)

Required Courses: 61 credits
Complementary Courses: 16-19 credits
Electives: To meet the minimum credit requirement for the degree.

	CREDITS
Required Courses:	**61**
All of the required courses (52 credits) specified for the Agricultural Sciences Major – General Option, with the addition of:	
AGRI340 Principles of Ecological Agriculture	3
AGRI341 Ecological Agriculture Systems	3
WILD205 Principles of Ecology	3
Complementary Courses:	**16 to 19**

at least one of:

ANSC323	(4)	Mammalian Physiology
PLNT353	(4)	Plant Structure and Function

at least one production course in Agricultural Science:

AGEC331	(3)	Farm Business Management
ANSC450	(3)	Dairy Cattle Production
ANSC452	(3)	Beef Cattle and Sheep Production
ANSC454	(3)	Swine Production
ANSC456	(3)	Poultry Production
PLNT331	(3)	Field Crops

at least 3 credits must be chosen from three of the four blocks below:

AGRI201D1	(3)	Agri-Environment Internship
and AGRI201D2	(3)	Agri-Environment Internship
AGRI435	(3)	Soil and Water Quality Management
SOIL335	(3)	Soil Ecology and Management
SOIL445	(3)	Agroenviron. Fertilizer Use
SOIL521	(3)	Soil Microbiology and Biochemistry

MICR331 (3) Microbial Ecology
PLNT434 (3) Weed Biology and Control
PLNT460 (3) Plant Ecology

AGEC333 (3) Resource Economics
ENVR201 (3) Society and Environment
ENVR400 (3) Environmental Thought

AGRICULTURAL SCIENCES INTERNSHIP MAJOR – ECOLOGICAL AGRICULTURE OPTION (96credits)

Required Courses: 73 credits
Complementary Courses: 13 credits
Electives: To meet the minimum credit requirement for the degree.
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	CREDITS
Required Courses:	**73**
All of the required courses (61 credits) specified for the Agricultural Sciences Major – Ecological Agriculture Option, with the addition of:	
AGRI201D1 Agri-Environment Internship	3
AGRI201D2 Agri-Environment Internship	3
AGRI301D1 Agrology Internship	3
AGRI301D2 Agrology Internship	3
Complementary Courses:	**13**

at least one of:
ANSC323 (4) Mammalian Physiology
PLNT353 (4) Plant Structure and Function

at least one production course in Agricultural Science:
AGEC331 (3) Farm Business Management
ANSC450 (3) Dairy Cattle Production
ANSC452 (3) Beef Cattle and Sheep Production
ANSC454 (3) Swine Production
ANSC456 (3) Poultry Production
PLNT331 (3) Field Crops

at least 3 credits must be chosen from two of the three blocks below:
AGRI435 (3) Soil and Water Quality Management
SOIL335 (3) Soil Ecology and Management
SOIL445 (3) Agroenviron. Fertilizer Use
SOIL521 (3) Soil Microbiology and Biochemistry

MICR331 (3) Microbial Ecology
PLNT434 (3) Weed Biology and Control
PLNT460 (3) Plant Ecology

AGEC333 (3) Resource Economics
ENVR201 (3) Society and Environment
ENVR400 (3) Environmental Thought

AGRICULTURAL SCIENCES MAJOR – INTERNATIONAL AGRICULTURE OPTION (90credits)

Required Courses: 58 credits
Complementary Courses: 16 credits
Electives: To meet the minimum credit requirement for the degree.

	CREDITS
Required Courses:	**58**
All of the required courses (52 credits) specified for the Agricultural Sciences Major – General Option, with the addition of:	
AGRI411 International Agriculture	3
AGEC442 Economics of International Agricultural Development	3
Complementary Courses:	**16**

at least one of:
ANSC323 (4) Mammalian Physiology
PLNT353 (4) Plant Structure and Function

at least one production course in Agricultural Science:
AGEC331 (3) Farm Business Management
ANSC450 (3) Dairy Cattle Production
ANSC452 (3) Beef Cattle and Sheep Production
ANSC454 (3) Swine Production
ANSC456 (3) Poultry Production
PLNT331 (3) Field Crops
a minimum of 9 credits chosen from the following:
ANTH212 (3) Anthropology of Development
POLI227 (3) Developing Areas/Introduction
SOCI254 (3) Development and Underdevelopment
GEOG216 (3) Geography of the World Economy
GEOG404 (3) Environmental Management 2
AGRI341 (3) Ecological Agriculture Systems
AGRI305 (3) Barbados Agro-Ecosystems
AGEC430 (3) Agriculture, Food and Resource Policy
NUTR501 (3) Nutrition in Developing Countries

AGRICULTURAL SCIENCES INTERNSHIP MAJOR – INTERNATIONAL AGRICULTURE OPTION (96credits)

Required Courses: 70 credits
Complementary Courses: 16 credits
Electives: To meet the minimum credit requirement for the degree.

	CREDITS
Required Courses:	**70**
All of the required courses (58 credits) specified for the Agricultural Sciences Major – International Agriculture Option, with the addition of:	
AGRI201D1 Agri-Environment Internship	3
AGRI201D2 Agri-Environment Internship	3
AGRI301D1 Agrology Internship	3
AGRI301D2 Agrology Internship	3
Complementary Courses:	**16**
As described for the Agricultural Sciences Major – International Agriculture Option.	

AGRICULTURAL SCIENCES MAJOR – SOIL SCIENCE OPTION (90credits)
Required Courses:
52 credits
Complementary Courses: 25 credits
Electives: To meet the minimum credit requirement for the degree
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	CREDITS
Required Courses:	**52**
All of the required courses (52 credits) specified for the Agricultural Sciences Major – General Option.	
Complementary Courses:	**25**

at least one of:
ANSC323 (4) Mammalian Physiology
PLNT353 (4) Plant Structure and Function
SOIL326 (3) Soil Genesis and Classification

at least one production course in Agricultural Science:
AGEC331 (3) Farm Business Management
ANSC450 (3) Dairy Cattle Production
ANSC452 (3) Beef Cattle and Sheep Production
ANSC454 (3) Swine Production
ANSC456 (3) Poultry Production
PLNT331 (3) Field Crops

a minimum of 18 credits chosen from the following:
AGRI435 (3) Soil and Water Quality Management
BREE217 (3) Hydrology and Water Resources
SOIL200 (3) Introduction to Earth Science
SOIL326 (3) Soil Genesis and Classification
SOIL331 (3) Soil Physics
SOIL335 (3) Soil Ecology and Management
SOIL410 (3) Soil Chemistry
SOIL521 (3) Soil Microbiology and Biochemistry

AGRICULTURAL SCIENCES INTERNSHIP MAJOR – SOIL SCIENCE OPTION (96credits)

Required Courses: 64 credits
Complementary Courses: 25 credits
Electives: To meet the minimum credit requirement for the degree.

	CREDITS
Required Courses:	**64**
All of the required courses (52 credits) specified for the Agricultural Sciences Major – Soil Science Option, with the addition of:	
AGRI201D1 Agri-Environment Internship	3
AGRI201D2 Agri-Environment Internship	3
AGRI301D1 Agrology Internship	3
AGRI301D2 Agrology Internship	3
Complementary Courses:	**25**
As described for the Agricultural Sciences Major – Soil Science Option.	

13.6.9 Field Studies

African Field Study Semester
The Department of Geography, Faculty of Science, coordinates the 15-credit interdisciplinary African Field Study Semester, see section 15.1.1 "African Field Study Semester".
Note: The AFSS will only be offered in 2005-2006 pending approval by the Dean of Science.

Barbados Field Study Semester
The Department of Bioresource Engineering, Faculty of Agricultural and Environmental Sciences, coordinates the 15-credit interdisciplinary Barbados Field Study Semester, offered in the fall term. For more information, see section 15.1.2 "Barbados Field Study Semester".

Macdonald Summer Field Course
The Department of Natural Resource Sciences coordinates a summer field course which offers students the opportunity to participate in supervised field research not easily studied at other times of the year. For more information, see the Department of Natural Resource Sciences, section13.6.6 "Department of Natural Resource Sciences".

Panama Field Study Semester
The program is a joint venture between McGill University and the Smithsonian Tropical Research Institute (STRI) in Panama. For more information, see section 15.1.3 "Panama Field Study Semester" . You can also visit the following website for details: www.mcgill.ca/mse/field_study/panama

13.7 Graduate Programs

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

The advanced courses of study offered lead to the degrees of Master of Science, Graduate Certificate in Biotechnology, and Doctor of Philosophy.

Information on these programs and related fellowships is available from the Student Affairs Office, Macdonald Campus of McGill University, Sainte-Anne-de-Bellevue, QC H9X3V9.

The *Graduate and Postdoctoral Studies Calendar* and full information regarding graduate courses, theses, registration, fellowships, etc., can be accessed on the McGill Website, www.mcgill.ca.

13.8 Farm Management and Technology Program

Farm Management and Technology Program
Faculty of Agricultural and Environmental Sciences
P.O. Box 204, Macdonald Campus of McGill
21,111 Lakeshore Road
Sainte-Anne-de-Bellevue, QC H9X 3V9
Telephone: (514) 398-7814
Fax: (514) 398-7955
E-mail: fmt.macdonald@mcgill.ca
Website: www.mcgill.ca/fmt

Director - Marcel J. Couture

13.8.1 Program – FMT

This 3-year academic and practical program is offered on the Macdonald Campus and taught by the staff of the Faculty of Agricultural and Environmental Sciences of McGill University. The program is funded by the ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec and authorized by the ministère de l'Éducation du Québec.

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.

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

During the second summer, students are registered in Entrepreneurship 1, which involves agricultural enterprises. The students will be responsible for data collection to be used in their Farm Project and the Nutrient Management Plan 2 when they return to campus for the Fall semester. The internships and practicums will enable the students to relate their academic work to the reality of farming and the agri-food sector.

Finally, courses in English, Français, Humanities, Physical Education and two complementary courses taken during the program will entitle the student to receive a Diplôme d'études collégiales (DEC) from the ministère de l'Éducation du Québec. Students will also receive a certification from Macdonald Campus stating that they have successfully completed the requirements of the Farm Management and Technology Program.

13.8.2 Entrance Requirements – FMT

1. Students should have a good practical knowledge of farming under eastern Canadian conditions. One year of experience is recommended but under special conditions a four-month summer season is acceptable.
2. The minimum academic entrance requirements are a Quebec High School Leaving Certificate (Secondary V), or its equivalent and any other academic requirement set by the M.E.Q.
3. All candidates for admission must make arrangements to come to the Macdonald Campus for an interview prior to admission to the program.
4. Admission to this program is only in the Fall semester.
5. We strongly encourage incoming students to acquire their driver's permit (both for cars **and** farm equipment) before com-

ing to Macdonald Campus. This is first for safety reasons, given that students work with farm equipment (Soil Preparation) very early on as they arrive at Macdonald. As well, most farmers require that their employees and stagiaires know how to drive and possess the appropriate driver's license.

13.8.3 Registration – FMT

Students in the Farm Management and Technology Program must register on-line using Minerva at www.mcgill.ca/minerva-students for each semester at McGill.

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

13.8.4 Program Outline

Administrative Unit
FMTP 001 Farm Practice 1
FMTP 011 Farm Practice 2
FMTP 036 Enterprise Internship
FMTP 007 Health and Farm Safety
FMTP 037 Entrepreneurship 1

Bioresource Engineering
FMTP 018 Building Maintenance
FMTP 024 Farm Building Planning
FMTP 014 Machinery Management
FMTP 004 Microcomputing
FMTP 027 Precision Farming
FMTP 021 Soil and Water Conservation
FMTP 003 Soil Preparation
FMTP 019 Tools and Machinery Maintenance

Agricultural Economics
FMTP 039 Agri-Marketing
FMTP 002 Introduction to Economics
FMTP 038 Financial and Managerial Accounting
FMTP 042 Budgeting, Finance and Policies
FMTP 043 Entrepreneurship 2
FMTP 025 Farm Project
FMTP 044 Management of Human Resources

Animal Science
FMTP 005 Animal Anatomy and Physiology
FMTP 008 Introduction to Animal Science

English
FMTP 080 English Upgrading
FMTP 084 English for FMT
FMTP 081 Components of Discourse
FMTP 082 Literary Genres
FMTP 083 Literary Themes

Français
FMTP 075 Langue française et communication
FMTP 098 Français agricole

Humanities
FMTP 085 Humanities 1: Knowledge
FMTP 086 Humanities 2: World Views
FMTP 087 Environmental and Organizational Issues

Natural Resource Sciences
FMTP 040 Nutrient Management Plan 1
FMTP 041 Nutrient Management Plan 2
FMTP 009 Soil Fertilization

Physical Education
FMTP 093 Health and Physical Education
FMTP 094 Physical Activity
FMTP 095 Active Living

Plant Science
FMTP 006 Agricultural Botany
FMTP 017 Pesticide Use

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

Animal Science category
FMTP 028 Dairy Heifer Management
FMTP 029 Dairy Herd Management
FMTP 030 Swine and Poultry
FMTP 031 Beef and Sheep

Plant Science category
FMTP 034 Feed Crops
FMTP 035 Industrial Crops
FMTP 033 Greenhouse Crops
FMTP 032 Fruit and Vegetable Crops

COMPLEMENTARY COURSES *
Students must take the following complementary courses to meet the program requirements:
FMTP 096 Forests, Forestry and Society
FMTP 097 Landscape Design
* After consultation with their academic adviser, students can substitute complementary courses taken at another collegial institution. This includes science courses which are required for further studies in a degree program. The cost associated with courses taken elsewhere must be assumed by the students.

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

The passing grade is 60%. The mark indicating that the student has successfully completed the Comprehensive Assessment will appear on the student's transcript. Students who failed the Comprehensive Assessment will be offered the possibility of completing same the following year.

ENGLISH EXIT EXAMINATION
All students who wish to graduate and obtain the D.E.C. must pass the English Exit Examination that is offered by the M.E.Q. Students must take this examination on the date selected by the M.E.Q.

13.8.5 Academic Rules and Regulations – FMT

13.8.5.1 Sessional Dates

The number of teaching and examination days is set by the ministère de l'Éducation du Québec. The sessional dates vary from year to year. At the present time, each semester has 75 teaching days and 7 days of exams.

13.8.5.2 Last Day for Withdrawal or Course Additions

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

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

13.8.5.3 Academic Standing

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

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

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

Students on probation are normally permitted to register for not more than 10 credits per semester. They are not permitted to be

on probation for more than one semester unless they obtain an SPA of 70% or higher.

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

13.8.5.4 Handbook on Student Rights and Responsibilities

This Handbook is a compendium of regulations and policies governing student rights and responsibilities at McGill University. It is published jointly by the Dean of Students' Office and the Secretariat. A copy of the Handbook can be found on the Web at www.mcgill.ca/secretariat/statutes/documents or obtained from the Student Affairs Office or the Macdonald Campus Student Affairs Office.

13.8.5.5 Institutional Policy on the Evaluation of Student Achievement

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 which will allow students to more fully understand and participate in the educational process;
- to provide the framework within which instructors and academic administrators can exercise their professional judgment in a competent, just, and coherent fashion.

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

13.8.6 Fees and Expenses – FMT

13.8.6.1 Fees

Tuition fees for all full-time students who are eligible for the Farm Management and Technology Program are paid by the ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec. Student Services and Student Societies' fees, as well as course material fees, will be charged according to the schedule in effect for all Macdonald Campus students. At the time of printing, the fees were $690.95 for the Fall semester and $546.35 for the Winter semester.

* 2005-06 fees, subject to change without notice.

13.8.6.2 Textbooks and Supplies

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

13.8.6.3 Financial Assistance

A limited number of loans are granted on the basis of financial need to full-time students who maintain satisfactory academic standing, however, all applicants for McGill aid must apply for maximum government aid or other assistance for which they are eligible.

Applicants must arrange for an interview with a Student Aid Counsellor. During the academic year, the Counsellor visits Macdonald Campus on a regular basis to help students with financial difficulties.

For more information see section 4.9 "Scholarships and Financial Aid" or contact the Coordinator at the Student Services Centre, telephone (514) 398-7992. Applications for McGill loans may be obtained from the Coordinator.

13.8.7 Residence Accommodation – FMT

The Laird Hall Residence has a capacity for more than 210 students. It accommodates undergraduate, graduate, and Farm Management and Technology Program students on the Macdonald Campus. For more information, see section 4.13.2 "University Residences – Macdonald Campus".

13.9 Instructional Staff

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