Academic Program Reviews 2004-2008

Final Program Review Summary Sheets –Faculty of Agricultural & Environmental Sciences

Agricultural Economics Major

B.Sc.(AgEnvSc)

Program Study Group:

Laurence Baker
John Henning
Paul Thomassin
A. Nassem
Student members: A. Hussain, R. Roy

Strengths:

- The Agricultural Economics Major is an interdisciplinary program combining social and biophysical sciences.
- Students meet the academic requirements for admission to the "Ordre des agronomes du Québec" and the Institutes of Agrologists in other provinces.
- Research experiences are integrated into the program.
- Students have excellent course selection due to IUTS that connects Montreal's four universities.
- There are strong employment prospects for graduates in areas related to agriculture and resource management.

Recommendations for improvements:

- Fill the recently vacated position with someone with specialized knowledge in Agri-business, Finance and Management.
- Modify the existing program to fit the new structure of the B.Sc.(AgEnvSc) degree with a major of 42 credits and specializations of 24 credits.
- Discussions are underway with the MSE on the development of a domain in Environmental Economics, perhaps focused on ecosystem valuation. This program will attract more students to Faculty of Agricultural and Environmental Sciences and courses offered by the unit.
- Undertake a more concerted effort at recruitment in Quebec and Eastern Ontario.

April 2009

Agricultural Sciences Major
B.Sc.(AgEnvSc)

Program Study Group:

Katherine McClintock
Roger Cue
John Henning
P. Lavoie
Guy Mehuys
Student members: J. Breton, J. Falardeau, J-F. Aumont, V. Courchesne

Strengths:

- The Agricultural Sciences Major allows students to take a variety of courses in areas such as Plant Science, Animal Science, Soil Science, Food Science, Agricultural Engineering, Agricultural Economics as well as basic science and social science courses.
- Students meet the academic requirements for admission to the "Ordre des agronomes du Québec" and the Institutes of Agrologists in other provinces.
- Small classes and many opportunities for hands-on training help to teach students about the kinds of problems encountered on farms.
- Students have the option to take internships, work in teams and take part in international exchanges.
- Graduates are in demand in the labor market.

Recommendations for improvements:

- Make recruitment a priority for all the agricultural programs.
- Provide farm exposure for non-farm students early in the program.
- Make better use of our excellent field facilities.
- Give students more choice among social science and humanities courses, and make it easier for them to take the ones that are already offered through the McGill School of Environment by improving the timetable.
- Add a course on the laws and regulations governing agriculture.
- Revise the major into a 42-credit major to be renamed the Agro-environmental Sciences Major and develop Specializations in Agricultural Economics, Animal Health and Disease, Animal Production, Ecological Agriculture, Entomology, International Agriculture, Plant Production, Plant Protection, and Soil and Water Resources, to be taken in conjunction with the new Major.
- Develop the specialization in Professional Agrology to meet the requirements of the "Ordre des agronomes du Québec".

April 2009

Animal Biology Major
B.Sc.(AgEnvSc)

Program Study Group:

Armando Jardim
J. Flannan Hayes
Humberto Monardes
Arif Mustafa
Xin Zhao
B. Stewart
Student member: F. Graham

Strengths:

- The Animal Biology Major focuses on basic and applied science related to large animals and birds.
- Students obtain a strong background in biological sciences that allows them to pursue a wide range of options on graduation: veterinary schools, medical schools, health sciences; graduate programs in molecular biology, or the biomedical sciences; or positions in industry or government related to animal health, animal production and food safety.
- Small classes and many opportunities for hands-on training.
- Students have the option to take internships, work in teams and take part in international exchanges.

Recommendations for improvements:

- Develop new Specializations in areas that should attract students: Animal Biology; and Animal Health and Disease (Department of Animal Science, in conjunction with the newly proposed Life Sciences major).
- Address in future curriculum revisions the question of low enrolment courses and the development of new courses covering Equine studies and Companion Animals.
- Request new teaching resources to deal with non-traditional offerings that are not currently covered by existing staff.
- Incorporate food safety into the curriculum (in conjunction with a recent hire).
- Make a greater effort to include aspects of animal welfare and behavior in all relevant courses.

April 2009

Animal Science Major
B.Sc.(AgEnvSc)

Program Study Group:

Armando Jardim
J. Flannan Hayes
Humberto Monardes
Arif Mustafa
Xin Zhao
B. Stewart
Student member: F. Graham

Strengths:

- The Animal Science Major allows students to focus on the many aspects of animal livestock production, in terms of breeding and genetics, nutrition, reproductive physiology, health and disease.
- Students meet the academic requirements for eligibility to the "Ordre des agronomes du Québec" (the equivalent of Professional Agrologist in other provinces).
- Small classes and many opportunities for hands-on training help to teach students about the kinds of problems encountered in livestock production.
- Students have the option to take internships, work in teams and take part in international exchanges.
- Graduates are in high demand in the labor market.

Recommendations for improvements:

- Develop a new Specialization in the area of Animal Production (Department of Animal Science, in conjunction with the newly proposed Agro-environmental Sciences major).
- Train students in the requirements for the "Ordre des agronomes du Québec" (this new specialization combined with the Professional Agrology specialization).
- Monitor closely the need to balance departmental hires with staff who are expert in livestock production science.
- Make a greater effort to include aspects of animal welfare and behavior in all relevant courses.

April 2009

Applied Zoology Major
B.Sc.(AgEnvSc)

Program Study Group:

Benoit Côté
Terry Wheeler
Manfred Rau
Christopher Buddle
David Lewis
Ian Strachan
Guy Mehuys
Joann Whalen
Rodger Titman
Murray Humphries
Marcia Waterway
A Gossage
K. Mousavi
Student member: A. Hibbert

Strengths:

- Program allows students to study the wide range of diversity of animals from invertebrates to vertebrates, including fish and wildlife.
- Strong course offering of entomology.
- Students can focus on life related to: soils, water, physiology, parasitology or vertebrate biology and ecology.
- Small classes and many opportunities for hands-on training, internships, to work in teams and take part in international exchanges.

Recommendations for improvements:

- Replace the Applied Zoology Major with a new program in Environmental Biology with a specialization in Entomology.
- Increase the number of entomology courses in the list of complementary courses of the Biodiversity and Conservation domain of the MSE to increase enrolment in the courses.
- Take care in the choice of courses to include in the Domain to meet the needs of the students in that program while offering a clearly different expertise/specialization than in the Entomology specialization.
- Review our course offerings in entomology to allow for a comprehensive program with a logical suite of courses.

April 2009

Bioresource Engineering Major
B.Eng.(Bioresource)

Program Study Group:

Robert Bonnell
Edward McKyes
Ning Wang
Kevin Wade
S. Gregus
S. Sotocinal
Student member: S. Petrus

Strengths:

- Students meet the academic requirements for admission to the "Ordre des ingénieurs du Québec", the "Ordre des agronomes du Québec", and similar professional associations across Canada and United States.
- Research and design is an integral part of the program.
- Students can specialize by choosing one of five streams: Bio-Environmental Engineering, Soil and Water Engineering, Ecological Engineering, Food and Bioprocess Engineering, or Agricultural Engineering.
- Graduates are in high demand in the labor market.

Recommendations for improvements:

- Increase enrolment and bolster teaching/research capacities in new concentrations within Bioresource Engineering (short-term goal).
- Improve our ability to provide the growing population of students with state-of-the-art laboratory equipment (a long-term goal).
- We have hired new tenure track professors who will help to enlarge our ability to train students in new fields of Bioresource Engineering (these new fields include: ecosystem modeling, bio-processing and bio-fuel research and technologies, and sensors and precision agriculture).

April 2009

Botanical Science Major
Plant Science Major
B.Sc.(AgEnvSc)

Program Study Group:

Donald Smith
Marcia Waterway
Sylvie de Blois
Philippe Séguin
Martina Stromvik
Arif Mustafa
R. James
M. Bleho
Student members: B. Gélinas, V. Bérubé

Strengths:

- Students study the scientific basis of a wide range of concepts related to plant growth, development, reproduction, anatomy, physiology, systematics, ecology and evolution.
- The Plant Science Major focuses on biological and economic processes at work in sustainable plant production.
- The Botanical Science Major focuses on botany, mycology, ecology and environmental science (Ecology Option) or plant molecular biology and biotechnology (Molecular Option).
- Small classes and many opportunities for hands-on training, internships, to work in teams and take part in international exchanges.

Recommendations for improvements:

- Develop the core of these majors. The department is ready for renewal and has been working with the program directors of Life Sciences, Environmental Biology, International Agriculture and Food Systems and Agro-environmental Sciences.
- Develop specializations that can be used in conjunction with the new majors: Plant Production, Plant Biology, Plant Protection and Restoration Ecology.
- Create new courses that better fit the new majors and take advantage of the expertise of new faculty. The specializations will allow the department to do so.
- Emphasize experiential learning and make use of the excellent facilities offered on the Macdonald Campus and field stations.
- Retire the Majors in Botanical Science and Plant Science.

April 2009

Dietetics Major
B.Sc.(FSc)
Nutrition Major
B.Sc.(NutrSc)

Program Study Group:

Kristine Koski
Linda Wykes
Luis Agellon
Katherine Gray-Donald
Stan Kubow
Lise Thibault
Hope Weiler
Timothy Johns
Grace Egeland
Grace Marquis
Harriet Kuhnlein
Linda Starkey
M. Rose
J. Routhier
S. Phillips
M. Hendrickson
H. Plourde
Student members: Representatives from DHNUS (Dietetics and Human Nutrition Undergraduate Student Society)

Strengths of the program

- Students in both Majors receive an excellent background in basic science courses related to health and nutrition.
- The Dietetics Major conforms to the requirements for Dietitians of Canada (DC) and for "l'ordre professionnel des diététistes du Québec" (OPDQ) and with its 40 week integrated internship prepares students to become licensed health professionals in the field of dietetics.
- The Nutrition Major allows students to specialize in one of four Options: Nutritional Biochemistry, Food Function and Safety, Global Nutrition or Sports Nutrition.
- Graduates of both majors are in demand in the growing labor market.

Recommendations for improvements for the program

- Expand enrolment to 200 students per year (100 in Dietetics, 50 in Nutrition and 50 in the new concurrent B.Sc. (Food Science)/B.Sc. (Nutritional Science) program.
- Relocate and modernize the Southam Food Laboratory to accommodate the increased enrolment.
- Enlarge the videoconferencing facilities to accommodate larger nutrition classes in order to increase nutrition offerings on the downtown campus,.
- Construct a '2-way mirror' interviewing facility for the development of students' interviewing and counseling skills.
- Increase medical content in Clinical Nutrition Support and Drug Metabolism and in Human Anatomy and Pathophysiology.
- Increase social science content by offering a second social science course in the area of motivation and behaviour change.
- Develop international field studies (Barbados, Central America and Panama, and Ghana) and placements with Canadian indigenous communities for undergraduate and graduate interns.
- Develop industrial internships for the concurrent degree program.

April 2009

Environmental Biology Major
B.Sc.(AgEnvSc)

Program Study Group:

Benoit Côté
Terry Wheeler
Manfred Rau
Christopher Buddle
David Lewis
Ian Strachan
Guy Mehuys
Joann Whalen
Rodger Titman
Murray Humphries
Marcia Waterway
A. Gossage
K. Mousavi
Student member: A. Hibbert

Strengths:

- The Environmental Biology Major provides a basic background in biology and a strong emphasis in ecology.
- By selecting appropriate courses in air, water, soil, plants, animals, insects and microbes, students are well-equipped to investigate the relationships between organisms and their environment.
- Small classes and many opportunities for hands-on training, field trips, internships, to work in teams and take part in international exchanges.

Recommendations for improvements:

- Redesign the Environmental Biology Major to provide the core science requirements for the following specializations: Applied Ecosystem Sciences, Entomology, Multidisciplinary Environmental Biology, Plant Biology, Plant Protection, Soil and Water Resources and Wildlife Biology.
- Develop an honours program.

April 2009

Food Science
B.Sc.(FSc)

Program Study Group:

Selim Kermasha
Inteaz Alli
K-F. Ng-Kwai-Hang
Varoujan Yaylayan
L. Stiebel
Student member: K.G. Palynchuk

Strengths:

- The Major in Food Science provides students with basic knowledge, training and skills in the discipline of Food Science.
- Students specialize by choosing one of three Options: Food Chemistry, Food Science or Food Industry.
- Students in the Food Chemistry and Food Science Options qualify for certification by the Institute of Food Technologists.
- Students in the Food Chemistry Option are eligible for admission to the "Ordre des Chimistes du Québec".
- Graduates are in demand in the labor market.

Recommendations for improvements:

- Maintain and enriched the current programs offered by our Department, in particular, Food Science and Food Chemistry Options and broaden our base with a concurrent degree program in Food Science and Nutrition
- Retire the Food Industry option and to develop a new Food Safety option.
- Strengthen the Department with new Faculty members in the areas of Food Safety and Food Biotechnology which have interdisciplinary elements relevant to the Faculty of Agricultural and Environmental Sciences.
- Develop an industrial internship for students in our programs.
- Develop new courses that fit current trends in Food Science, including Food Safety, Food Toxicology, Food Bioinformatics and Food Nanotechnology.
- Upgrade the teaching laboratories.
- Provide students with the required facilities to implement newly developed courses Product Development and Sensory Evaluation.
- Implement industrial field trips for our students.

April 2009

Microbiology Major
B.Sc.(AgEnvSc)

Program Study Group:

Brian Driscoll
Donald Niven
Lyle Whyte
D. Meek
A. Gossage
Student members: E. Neesham-Grenon, C. Ruh

Strengths:

- Students receive a comprehensive training in basic and applied microbiology and take courses in cellular biology, genetics and molecular biology.
- The program provides extensive hands-on laboratory training where students develop excellent technical skills.
- A significant research component is integrated into the program.

Recommendations for improvements:

- Offer a Specialization in Microbiology in conjunction with the new Life Sciences Major.
- Maintain critical core of microbiology courses that are being used in multiple programs.

April 2009

Resource Conservation Major
B.Sc.(AgEnvSc)

Program Study Group:

Benoit Côté
Terry Wheeler
Manfred Rau
Christopher Buddle
David Lewis
Ian Strachan
Guy Mehuys
Joann Whalen
Rodger Titman
Murray Humphries
Marcia Waterway
A. Gossage
K. Mousavi
Student member: A. Hibbert

Strengths:

- The Resource Conservation Major prepares students to deal with the problems of integrated resource management and environmental protection.
- The program emphasizes ecology anchored by a strong foundation in fundamental sciences.
- Strong course offering in soil and water management.
- Small classes and many opportunities for hands-on training, field trips, internships, to work in teams and take part in international exchanges.

Recommendations for improvements:

- Create a specialization with a more up-to-date approach to applied environmental resource conservation and building on the strong course offerings in soil and water science e.g., Soil and Water Resources Specialization.
- Integrate the resource management courses of the Resource Conservation major into the Renewable Resource Management domain (McGill School of Environment).

April 2009

Wildlife Biology Major
B.Sc.(AgEnvSc)

Program Study Group

Benoit Côté
Terry Wheeler
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Christopher Buddle
David Lewis
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Guy Mehuys
Joann Whalen
Rodger Titman
Murray Humphries
Marcia Waterway
A. Gossage
K. Mousavi
Student member: C. Dair

Strengths:

- The Wildlife Biology Major provides students with a basic knowledge of the principles of ecology and wildlife management.
- Field work is an essential part of many of the courses in this program and provides an excellent opportunity for students to learn about wildlife in a natural setting from a group of enthusiastic professors.
- Small classes and many opportunities for hands-on training, internships, to work in teams and take part in international exchanges.

Recommendations for improvements:

- Build on the strong foundation of ecology and biology courses offered by the new Environmental Biology major to offer a specialization in Wildlife Biology.
- Maintain “Wildlife” in the program’s name.
- Consult with the Department of Animal Science on ways to decrease/minimize the confusion associated with the names of the two Faculty of Agricultural and Environmental Sciences majors dealing with animals: Animal Biology and Wildlife Biology

April 2009

Graduate programs: Masters programs

Graduate Certificate in Bioresource Engineering-Integrated Water Resource Management
Graduate Certificate in Biotechnology
Graduate Diploma in Registered Dietician Credentiality
M.Sc. in Animal Science (Thesis)
M.Sc.A in Animal Science
M.Sc. Bioresource Engineering (Thesis & Non-Thesis)
M.Sc.A in Bioresource Engineering
M.Sc. in Human Nutrition
M.Sc.A in Human Nutrition
M.Sc. in Food Science & Agricultural Chemistry (Thesis & Non-Thesis)
M.Sc. in Agricultural Economics (Thesis)
M.Sc. in Entomology (Thesis)
M.Sc. in Microbiology (Thesis)
M.Sc. in Renewable Resources (Thesis & Non-Thesis)
M.Sc. in Parasitology (Thesis)
M.Sc.A in Biotechnology
M.Sc. in Plant Science
M.Sc.A in Plant Science

Members of the Program Study Group

Roger Cue
Varoujan Yaylayan
Armando Jardim
Guy Mehuys
Linda Wykes
Stan Kubow
Vijayan Raghavan
Jacqueline Bede
L. Grant
C. Horvath
Student members: M. Nyisztor, A. Bailie

Strengths:

- Students have the opportunity to join internationally recognized research teams working on cutting-edge, interdisciplinary research activities.
- Diverse research interests of academic staff provide a wide range of possible research topics and techniques for graduate students.
- New initiatives by McGill University to fund M.Sc. students will provide financial support for Canadian and International students.
- Grants from funding agencies, such as the Canadian Foundation for Innovation and the Natural Sciences and Engineering Research Council of Canada, and the Québec government have allowed researchers to obtain state-of-the-art laboratory facilities.
- Reflecting program specializations, individual units may have specific guidelines.
- The Graduate Studies Office oversees students' progress through their program and ensures regular meetings between the graduate students and their supervisory committee.
- The program has considerable flexibility and offers both thesis-based and non-thesis M.Sc. degrees.

Recommendations for improvements:

- Establish a Faculty of Agricultural and Environmental Sciences Graduate Studies Committee to provide a forum to discuss Faculty-wide guidelines for supervision of graduate students to help ensure a positive graduate experience.
- Establish a reasonable funding level for all Faculty of Agricultural and Environmental Sciences graduate students.
- Provide an appropriate environment where thesis time-to-completion will be approximately 2 to 2.5 years for M.Sc. students.

April 2009

Graduate programs: Doctors of Philosophy

Ph.D. in Animal Science
Ph.D. in Bioresource Engineering
Ph.D. in Human Nutrition
Ph.D. in Food Science & Agricultural Chemistry
Ph.D. in Entomology
Ph.D. in Microbiology
Ph.D. in Renewable Resources
Ph.D. in Parasitology
Ph.D. in Plant Science

Members of the Program Study Group

Selim Kermasha
Katherine Gray-Donald
Roger Cue
Murray Humphries
Paula Ribeiro
Philippe Séguin
Shiv Prasher
C. Bowes
A. Gossage
Student members: N. Patocka

Strengths of the program

- The diversity of areas of research of the full-time academic staff provides a wide range of possible research topics for graduate students.
- New initiatives by McGill University to fund Ph.D. students will help both Canadian and Internationals students.
- Grants from funding agencies such as the Canadian Foundation for Innovation, and the Natural Sciences and Engineering Research Council of Canada have allowed researchers to obtain state-of-the-art laboratory equipment.
- Students have the opportunity of joining internationally respected research teams working on the cutting edge of research.
- Individual units have developed guidelines for the completion of the Ph.D. degree that are adapted to the area of study.
- The Graduate Studies Office oversees students' progress through their program and ensures that regular meetings between the graduate students and their supervisory committee.

Recommendations for improvements for the program

- Establish a Faculty of Agricultural and Environmental Sciences Graduate Studies Committee to provide a forum where the different approaches used in different units can be compared and efforts made to establish Faculty-wide guidelines for supervision of graduate students.
- Work to establish reasonable levels of funding for all graduate students in the Faculty of Agricultural and Environmental Sciences and to decrease the time-to-completion to approximately 3 to 4 years for Ph.D. students.
- The Faculty should develop a common strategy for the recruitment of graduate students. However each Department must take specific action for promoting their research areas.
- The Faculty should develop more common space for graduate students.
- Apply the MIDAS Program to M.Sc. international students, as there is significant probability for fast-tracking to Ph.D.
- The University should provide more funding for graduate students and funding should be equal or better than other universities in Quebec. Financial support should also be attributed to postdoctoral fellows.