



**McGill School of Environment  
Programs, Courses and University Regulations  
2013-2014**



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

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## *Publication Information*

Published by

### **Enrolment Services**

McGill University  
3415 McTavish Street  
Montreal, Quebec, H3A 0C8  
Canada

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1 About the McGill School of Environment, page 7

2

- 10.2.2 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) or Bachelor of Science (B.Sc.)- Major Environment - Ecological Determinants of Health - Population (63 credits) , page 44
- 10.3 Environmetrics Domain, page 48
  - 10.3.1 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) or Bachelor of Science (B.Sc.) - Major Environment - Environmetrics (63 credits) , page 48
- 10.4 Food Production and Environment Domain, page 51
  - 10.4.1 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) or Bachelor of Science (B.Sc.) - Major Environment - Food Production and Environment (63 credits) , page 51
- 10.5 Land Surface Processes and Environmental Change Domain, page 55
  - 10.5.1 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) or Bachelor of Science (B.Sc.)-Major Environment - Land Surface Processes and Environmental Change (63 credits) , page 55
- 10.6 Renewable Resource Management Domain, page 58

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## 1 About the McGill School of Environment

McGill's Faculties of Agricultural and Environmental Sciences, Arts, Science, and Law have forged a unique approach to the study of environment through the inter-faculty, trans-disciplinary McGill School of Environment (MSE).

The growth of technology, globalizing economies, and rapid increase in population have had dramatic and significant environmental impacts. These changes have been accompanied by an increasing awareness of the relationship between human activity and the environment. Environmental problems range from local and short-term degradation through to the perturbation observed over the entire globe and for many years. The importance of human-environment relations for environmental and social well-being, and the complexity and conflict involved in environmental analysis and decision making, requires a depth and breadth of knowledge. The MSE has developed its programs with the approach of introducing students to a broad range of ideas early in the program to provide a foundation and an openness upon which more specialized, disciplinary knowledge can be built.

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## 2 Mission of the School

The mission of the McGill School of Environment is:

- to provide a program that will develop a broad-based environmental literacy in the undergraduate population;
- to develop opportunities for graduate students to pursue studies of the environment at an advanced level to create future leaders and researchers; and
- to generate new ideas, new insights, new technologies, and new approaches to understanding and redressing environmental problems through academic research and outreach that draws on the University's existing strength in research and spans disciplinary boundaries.

Through a range of research and educational initiatives, the MSE aims to aid society in making environmental choices, in the context of diverse environmental world views that will sustain healthy societies within a flourishing biosphere.

Focusing on six themes:

- Biodiversity, Ecosystem Function, and Services
- Climate and Energy
- Disease and Environment
- Environmental Ethics
- Food Security
- Water

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## 3 About the School (Undergraduate)

The people and the programs of the McGill School of Environment are described in the following sections.

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### 3.1 Location

For advising, contact:

Program Adviser, Ms. Kathy Roulet  
Telephone: 514-398-4306  
Fax: 514-398-1643  
Email: [kathy.roulet@mcgill.ca](mailto:kathy.roulet@mcgill.ca)

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

Downtown Campus  
3534 University Street  
Montreal, Quebec H3A 2A7  
Telephone: 514-398-2827  
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Macdonald Campus  
 Rowles House  
 21,111 Lakeshore Road  
 Sainte-Anne-de-Bellevue, Quebec H9X 3V9  
 Telephone: 514-398-7559  
 Fax: 514-398-7846

### 3.2 Administrative Officers

#### Administrative Officers

|   |   |
|---|---|
| Chandra Madramootoo; B.Sc.(Agr.Eng.), M.Sc., Ph.D.(McG.)  | <b>Dean, Faculty of Agricultural and Environmental Sciences</b> |
| Christopher Manfredi; B.A.(Calg.), M.A., Ph.D.(Claremont) | <b>Dean, Faculty of Arts</b>                                    |
| Daniel Jutras; LL.B.(Montr.), LL.M.(Harv.)                | <b>Dean, Faculty of Law</b>                                     |
| Martin Grant; B.Sc.(PEI), M.Sc., Ph.D.(Tor.)              | <b>Dean, Faculty of Science</b>                                 |
| Marilyn Scott; B.Sc.(New Br.), Ph.D.(McG.)                | <b>Director</b>   |
| Sylvie de Blois; B.Sc.(Agr.)(McG.), M.Sc., Ph.D.(Montr.)  | <b>Associate Director, Graduate Affairs</b>                     |
| George McCourt; B.Sc., M.Sc.(Alta.), M.Sc.(McG.)          | <b>Associate Director, Undergraduate Affairs</b>                |
| Anthony Ricciardi; B.Sc.(Agr.), M.Sc., Ph.D.(McG.)        | <b>Associate Director, Research</b>                             |
| Kathryn Roulet; B.Sc.(Trent), M.Sc.(Guelph)               | <b>Program Adviser</b>  |

### 3.3 Academic Staff

#### Professors

Peter G. Brown; B.A.(Haver.), M.A., Ph.D.(Col.) (*joint appt. with Geography and Natural Resource Sciences*)  
 Colin Chapman; B.Sc., M.A., Ph.D.(Alta.) (*joint appt. with Anthropology*)

#### Associate Professors

Madhav Badami; B.Tech., M.Sc.(IIT), M.E.Des.(Calg.), Ph.D.(Br. Col.) (*joint appt. with School of Urban Planning*)  
 Elena Bennett; B.A.(Oberlin), M.Sc., Ph.D.(Wisc.) (*joint appt. with Natural Resource Sciences*)  
 Sylvie de Blois; B.Sc.(Agr.)(McG.), M.Sc., Ph.D.(Montr.) (*joint appt. with Plant Science*)  
 Jaye Ellis; B.A.(Calg.), LL.B., B.C.L.(McG.), LL.M.(Br. Col.) (*joint appt. with Law*)  
 Frédéric Fabry; B.Sc., M.Sc., Ph.D.(McG.) (*joint appt. with Atmospheric and Oceanic Sciences*)  
 Brian Leung; B.Sc.(Br. Col.), Ph.D.(Car.) (*joint appt. with Biology*)  
 Gregory Mikkelsen; B.A.(Trinity), M.S., Ph.D.(Chic.) (*joint appt. with Philosophy*)  
 Anthony Ricciardi; B.Sc.(Agr.), M.Sc., Ph.D.(McG.) (*joint appt. with Redpath Museum*)  
 Raja Sengupta; B.Sc.(Bom.), M.Sc.(IIT), Ph.D.(S. Illinois) (*joint appt. with Geography*)  
 Renée Sieber; B.Sc.(Mich. St.), M.P.A.(W. Mich.), Ph.D.(Rutg.) (*joint appt. with Geography*)  
 Ismael Vaccaro; B.A.(Barcelona), D.E.A.(Paris), M.A., Ph.D.(Wash.) (*joint appt. with Anthropology*)

#### Assistant Professors

Christopher Barrington-Leigh; B.Sc.(MIT), Ph.D.(Stan.), Ph.D.(Br.Col.) (*joint appt. with Institute for Health and Social Policy*)  
 Jeffrey Cardille; B.Sc.(Carn.Mell), M.Sc.(Georgia Tech.), M.Sc., Ph.D.(Wisc.) (*joint appt. with Natural Resource Sciences*)  
 Iwao Hirose; Ph.D.(St. And.) (*joint appt. with Philosophy*)  
 Nicolas Kosoy; B.Sc.(Universidad Simon Bolivar Venezuela), M.Sc.(Kent U at Canterbury), Ph.D.(Universidad Autonoma de Barcelona) (*joint appt. with Natural Resource Sciences*)  
 Jeanine Rhemtulla; B.Sc.(McG.), M.Sc.(Alta.), Ph.D.(Wisc.)



**Faculty Lecturers**

George McCourt; B.Sc., M.Sc.(Alta.), M.Sc.(McG.)

Kathryn Roulet; B.Sc.(Trent), M.Sc.(Guelph)

**Associate Members**

Agricultural Economics: Paul Thomassin

Animal Science: Sarah Kimmins

Anthropology: Andre Costopoulos, John Galaty

Atmospheric and Oceanic Sciences: Parisa Ariya

Biology: Lauren Chapman, Andrew Gonzalez, Irene Gregory-Eaves, Martin Lechowicz, Catherine Potvin

Bioresource Engineering: Jan Adamowski, Grant Clark, Mark Lefsrud, Chandra Madramootoo

Chemical Engineering: Nathalie Tufenkji, Viviane Yargeau

Civil Engineering and Applied Mechanics: Susan Gaskin, Marianne Hatzopoulou, Van-Thanh-Van Nguyen, Jim Nicell

Earth and Planetary Sciences: Jeanne Paquette

Economics: Robert Cairns, Chris Green, Tom Naylor

Electrical and Computer Engineering: Geza Joos

Epidemiology and Biostatistics: Mark Goldberg

Geography: Gail Chmura, Oliver Coomes, Thom Meredith, Tim Moore, Wayne H. Pollard, Navin Ramankutty, Nigel Roulet

History and Classical Studies: Daviken Studnicki-Gizbert

Languages, Literatures, and Cultures: Stephanie Posthumus

Law, Faculty of: Armand De Mestral, Jane Glenn, Richard Gold, Richard Janda, Hoi Kong

Management, Desautels Faculty of: Dror Etzion, Steve Maguire, Vedat Verter

Natural Resource Sciences: Benoit Côté, Christopher Buddle, Jim W. Fyles, William Hendershot, Gordon Hickey, Chris Solomon, Ian Strachan, Joann Whalen, Terry Wheeler

Parasitology, Institute of: Marilyn Scott

Pathology: Bruce Case

Philosophy: Philip Buckley

Plant Science: Caroline Begg, Pierre Dutilleul, Don Smith, Marcia Waterway

Political Science: Philip Oxhorn

Redpath Museum: David M. Green

Urban Planning, School of: Nik Luka

**Adjunct Professors**

Thomas Dietz; B.G.S.(Kent State Univ.), Ph.D.(Calif.-Davis)

Holly Dressel; B.A.(Ind.), M.A.(S. Fraser)

Nicholas Ogden; B.V.Sc.(Liv.), D.Phil.(Oxf.)

Katia Opalka; B.A., LL.B./B.C.L.(McG.)

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## 4 Admission, Registration, and Regulations

Information concerning admission to the McGill School of Environment and the regulations concerning the Environment programs is provided in these sections:

## Admission, Registration, and Regulations

*section 4.1: Admission*

*section 4.2: Degree Requirements*

*section 4.3: Advising in the MSE*

*section 4.4: Important Information about Program Selection*

*section 4.5: Course Numbering System at McGill*

*section 4.6: Examination Regulations*

*section 4.7: Courses Outside the Student's Faculty*

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### 4.1 Admission

You may be admitted to a B.A., B.A.&Sc., B.Sc.(Ag.Env.Sc.), or B.Sc. program offered by the MSE on the University's two campuses: the Macdonald campus (B.Sc.(Ag.Env.Sc.) program) and the Do

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## 4.5 Course Numbering System at McGill

The first four characters of a McGill course number refer to the unit offering the course. For example, MSE courses begin with the Subject Code ENVR.

The three numbers following the Subject Code refer to the course itself, with 200-level courses usually taken by U1 students, 300-level by U2 students, and 400-level by U3 students. As a senior undergraduate student, you can also take some 500-level courses, but you should limit yourself to no more than one per term. For more information, see *Programs, Courses and University Regulations > University Regulations and Resources > Undergraduate > Registration > : Course Information and Regulations*.

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## 4.6 Examination Regulations

Regulations concerning the method of evaluation of any course (including those governing supplemental examinations) are those of the faculty that offers the course. You should note that supplemental exams are available for courses taught in the Faculties of Arts, of Science, and of Education, but **not** for courses taught in the **Faculties of Agricultural and Environmental Sciences, Engineering, or Management**.



**Note:** All ENVR courses, regardless of where they are taught, are offered only by the Faculty of Science.

For more information on the University regulations and procedures, see *Programs, Courses and University Regulations > University Regulations and Resources > Undergraduate > : Examinations: General Information*.

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18 credits of complementary courses are selected as follows:

12 credits of MSE core courses:

Location Note: Core courses are taught at both McGill's Downtown campus and at the Macdonald campus in Sainte-Anne-de-Bellevue. You should register in Section 001 of an ENVR course that you plan to take on the Downtown campus, and in Section 051 of an ENVR course that you plan to take on the Macdonald campus.

|          |     |   |
|----------|-----|---|
| ENVR 200 | (3) | The Global Environment                  |
| ENVR 201 | (3) | Society, Environment and Sustainability |
| ENVR 202 | (3) | The Evolving Earth                      |
| ENVR 203 | (3) | Knowledge, Ethics and Environment       |
| ENVR 400 | (3) | Environmental Thought                   |

6 credits of environmentally related courses selected with the approval of the Program Adviser (at least 3 credits must be in natural sciences). A list of Suggested Courses is given below.

### Suggested Course List

The Suggested Course List is divided into two thematic categories: Social Sciences and Policy; and Natural Sciences and Technology.

Most courses listed at the 300 level and higher have prerequisites. You are urged to prepare your program of study with this in mind.

This list is not meant to be exhaustive. You are also encouraged to examine the course lists of the various domains in the Environment program for other courses that might interest you. Courses not on the Suggested Course List may be included in the Minor with the permission of the Program Adviser.

### Location Note:

When planning your schedule and registering for courses, you should verify where each course is offered because courses for this program are taught at both McGill's Downtown campus and at the Macdonald campus in Sainte-Anne-de-Bellevue.

### Social Sciences and Policy

\* Note: If WILD 415 is taken, 1 additional credit of complementary courses must be taken.

|          |     |   |
|----------|-----|---|
| AGEC 231 | (3) | Economic Systems of Agriculture                     |
| AGEC 333 | (3) | Resource Economics                                  |
| AGEC 430 | (3) | Agriculture, Food and Resource Policy               |
| AGEC 442 | (3) | Economics of International Agricultural Development |
| AGRI 210 | (3) | Agro-Ecological History                             |
| AGRI 411 | (3) | Global Issues on Development, Food and Agriculture  |
| ANTH 206 | (3) | Environment and Culture                             |
| ANTH 212 | (3) | Anthropology of Development                         |
| ANTH 339 | (3) | Ecological Anthropology                             |
| ANTH 512 | (3) | Political Ecology                                   |
| BREE 503 | (3) | Water: Society, Law and Policy                      |
| CIVE 433 | (3) | Urban Planning                                      |
| ECON 205 | (3) | An Introduction to Political Economy                |
| ECON 225 | (3) | Economics of the Environment                        |
| ECON 326 | (3) | Ecological Economics                                |
| ECON 347 | (3) | Economics of Climate Change                         |
| ECON 405 | (3) | Natural Resource Economics                          |
| ENVB 437 | (3) | Assessing Environmental Impact                      |
| ENVR 201 | (3) | Society, Environment and Sustainability             |

|          |     |   |
|----------|-----|---|
| ENVR 203 | (3) | Knowledge, Ethics and Environment                       |
| ENVR 400 | (3) | Environmental Thought                                   |
| GEOG 200 | (3) | Geographical Perspectives: World Environmental Problems |
| GEOG 210 | (3) | Global Places and Peoples                               |
| GEOG 216 | (3) | Geography of the World Economy                          |
| GEOG 221 | (3) | Environment and Health                                  |
| GEOG 300 | (3) | Human Ecology in Geography                              |
| GEOG 301 | (3) | Geography of Nunavut                                    |
| GEOG 302 | (3) | Environmental Management 1                              |
| GEOG 303 | (3) | Health Geography  |
| GEOG 370 | (3) | Protected Areas   |
| GEOG 382 | (3) | Principles Earth Citizenship                            |
| GEOG 403 | (3) | Global Health and Environmental Change                  |
| GEOG 408 | (3) | Geography of Development                                |
| GEOG 410 | (3) | Geography of Underdevelopment: Current Problems         |
| GEOG 430 | (3) | Global Land and Water Resources                         |
| GEOG 551 | (3) | Environmental Decisions                                 |
| MGPO 440 | (3) | Strategies for Sustainability                           |
| NRSC 221 | (3) | Environment and Health                                  |
| NRSC 540 | (3) | Socio-Cultural Issues in Water                          |
| PHIL 230 | (5) | Introduction to Moral Philosophy I                      |
| PHIL 237 | (3) | Contemporary Moral Issues                               |
| PHIL 334 | (3) | Ethical Theory  |
| PHIL 343 | (3) | Biomedical Ethics                                       |
| PHIL 348 | (3) | Philosophy of Law 1                                     |
| POLI 211 | (3) | Comparative Government and Politics                     |
| POLI 212 | (3) | Government and Politics - Developed World               |
| POLI 227 | (3) | Developing Areas/Introduction                           |
| POLI 345 | (3) | International Organizations                             |
| POLI 445 | (3) | International Political Economy: Monetary Relations     |
| PSYC 215 | (3) | Social Psychology                                       |
| RELG 270 | (3) | Religious Ethics and the Environment                    |
| RELG 340 | (3) | Religion and the Sciences                               |
| RELG 370 | (3) | Religion and Human Rights                               |
| RELG 376 | (3) | Religious Ethics  |

WILD 415\*

(2)

Conservation Law

**Natural Sciences and Technology**

|            |     |   |
|------------|-----|---|
| EPSC 201   | (3) | Understanding Planet Earth                              |
| EPSC 233   | (3) | Earth and Life History                                  |
| EPSC 425   | (3) | Sediments to Sequences                                  |
| EPSC 549   | (3) | Hydrogeology  |
| ESYS 301   | (3) | Earth System Modelling                                  |
| GEOG 200   | (3) | Geographical Perspectives: World Environmental Problems |
| GEOG 201   | (3) | Introductory Geo-Information Science                    |
| GEOG 205   | (3) | Global Change: Past, Present and Future                 |
| GEOG 272   | (3) | Earth's Changing Surface                                |
| GEOG 308   | (3) | Principles of Remote Sensing                            |
| GEOG 321   | (3) | Climatic Environments                                   |
| GEOG 322   | (3) | Environmental Hydrology                                 |
| GEOG 372   | (3) | Running Water Environments                              |
| GEOG 470   | (3) | Wetlands  |
| LSCI 230** | (3) | Introductory Microbiology                               |
| MICR 331   | (3) | Microbial Ecology                                       |
| MIME 308   | (3) | Social Impact of Technology                             |
| MIME 320   | (3) | Extraction of Energy Resources                          |
| MIMM 211** | (3) | Introductory Microbiology                               |
| MIMM 314   | (3) | Intermediate Immunology                                 |
| MIMM 323   | (3) | Microbial Physiology                                    |
| MIMM 324   | (3) | Fundamental Virology                                    |
| NRSC 333   | (3) | Pollution and Bioremediation                            |
| NRSC 340   | (3) | Global Perspectives on Food                             |
| NRSC 510   | (3) | Agricultural Micrometeorology                           |
| NRSC 514   | (3) | Freshwater Ecosystems                                   |
| PARA 410   | (3) | Environment and Infection                               |
| PARA 515   | (3) | Water, Health and Sanitation                            |
| PLNT 304   | (3) | Biology of Fungi  |
| PLNT 305   | (3) | Plant Pathology   |
| PLNT 358   | (3) | Flowering Plant Diversity                               |
| PLNT 426   | (3) | Plant Ecophysiology                                     |
| PLNT 460   | (3) | Plant Ecology   |
| SOIL 300   | (3) | Geosystems  |
| WILD 421   | (3) | Wildlife Conservation                                   |

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## 7.2 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) or Bachelor of Science (B.Sc.) - Minor Environment (18 credits)

This 18-credit Minor is intended for Faculty of Agricultural and Environmental Science students and Faculty of Science students, but is open to students from other faculties as well, except Arts and Law.

### Advising Note:



Consultation with the Program Adviser for approval of course selection to meet program requirements is obligatory. Only courses at the 200 level and above will be approved.

For information about the Minor in Environment, contact:

Ms. Kathy Roulet, MSE Program Adviser

Email: [kathy.roulet@mcgill.ca](mailto:kathy.roulet@mcgill.ca)

Telephone: 514-398-4306

**Complementary Courses (18 credits)**

18 credits of complementary courses are selected as follows:

12 credits of about 43% of the Program

|          |     |   |
|----------|-----|---|
| ECON 225 | (3) | Economics of the Environment                            |
| ECON 326 | (3) | Ecological Economics                                    |
| ECON 347 | (3) | Economics of Climate Change                             |
| ECON 405 | (3) | Natural Resource Economics                              |
| ENVB 437 | (3) | Assessing Environmental Impact                          |
| ENVR 201 | (3) | Society, Environment and Sustainability                 |
| ENVR 203 | (3) | Knowledge, Ethics and Environment                       |
| ENVR 400 | (3) | Environmental Thought                                   |
| GEOG 200 | (3) | Geographical Perspectives: World Environmental Problems |
| GEOG 210 | (3) | Global Places and Peoples                               |
| GEOG 216 | (3) | Geography of the World Economy                          |
| GEOG 221 | (3) | Environment and Health                                  |
| GEOG 300 | (3) | Human Ecology in Geography                              |
| GEOG 301 | (3) | Geography of Nunavut                                    |
| GEOG 302 | (3) | Environmental Management 1                              |
| GEOG 303 | (3) | Health Geography  |
| GEOG 370 | (3) | Protected Areas   |
| GEOG 382 | (3) | Principles Earth Citizenship                            |
| GEOG 403 | (3) | Global Health and Environmental Change                  |
| GEOG 408 | (3) | Geography of Development                                |
| GEOG 410 | (3) | Geography of Underdevelopment: Current Problems         |
| GEOG 530 | (3) | Global Land and Water Resources                         |
| GEOG 551 | (3) | Environmental Decisions                                 |
| MGPO 440 | (3) | Strategies for Sustainability                           |
| NRSC 221 | (3) | Environment and Health                                  |
| NRSC 540 | (3) | Socio-Cultural Issues in Water                          |
| PHIL 230 | (3) | Introduction to Moral Philosophy 1                      |
| PHIL 237 | (3) | Contemporary Moral Issues                               |
| PHIL 334 | (3) | Ethical Theory  |

|           |     |                                   |
|-----------|-----|-----------------------------------|
| SOCI 235  | (3) | Technology and Society            |
| SOCI 254  | (3) | Development and Underdevelopment  |
| SOCI 386  | (3) | Contemporary Social Movements     |
| URBP 201  | (3) | Planning the 21st Century City    |
| URBP 506  | (3) | Environmental Policy and Planning |
| URBP 530  | (3) | Urban Environmental Planning      |
| WILD 415* | (2) | Conservation Law                  |

### Natural Sciences and Technology

\* Note: you may take LSCI 230 or MIMM 211, but not both; you may take BIOL 432 or ENVB 315, but not both; you may take BREE 217 or GEOG 322, but not both; you may take ENVB 430 or GEOG 201, but not both; you may take BIOL 308 or ENVB 305, but not both.

|           |     |   |
|-----------|-----|---|
| AGRI 340  | (3) | Principles of Ecological Agriculture                        |
| AGRI 435  | (3) | Soil and Water Quality Management                           |
| ANSC 326  | (3) | Fundamentals of Population Genetics                         |
| ANTH 311  | (3) | Primate Behaviour and Ecology                               |
| ARCH 375  | (2) | Landscape   |
| ARCH 377  | (3) | Energy, Environment and Buildings                           |
| ARCH 378  | (3) | Site Usage  |
| ATOC 215  | (3) | Oceans, Weather and Climate                                 |
| BIOL 240  | (3) | Monteregian Flora   |
| BIOL 305  | (3) | Animal Diversity  |
| BIOL 308* | (3) | Ecological Dynamics   |
| BIOL 310  | (3) | Biodiversity and Ecosystems                                 |
| BIOL 342  | (3) | Marine Biology  |
| BIOL 418  | (3) | Freshwater Invertebrate Ecology                             |
| BIOL 432* | (3) | Limnology   |
| BIOL 436  | (3) | Evolution and Society                                       |
| BIOL 465  | (3) | Conservation Biology  |
| BREE 217* | (3) | Hydrology and Water Resources<br>(3)BREE 217*<br>OrgOceans, |

|           |     |   |
|-----------|-----|---|
| ENVB 315* | (3) | Science of Inland Waters                                |
| ENVB 410  | (3) | Ecosystem Ecology                                       |
| ENVB 415  | (3) | Ecosystem Management                                    |
| ENVB 430* | (3) | GIS for Natural Resource Management                     |
| ENVR 200  | (3) | The Global Environment                                  |
| ENVR 202  | (3) | The Evolving Earth                                      |
| EPSC 201  | (3) | Understanding Planet Earth                              |
| EPSC 233  | (3) | Earth and Life History                                  |
| EPSC 425  | (3) | Sediments to Sequences                                  |
| EPSC 549  | (3) | Hydrogeology  |
| ESYS 301  | (3) | Earth System Modelling                                  |
| GEOG 200  | (3) | Geographical Perspectives: World Environmental Problems |
| GEOG 201* | (3) | Introductory Geo-Information Science                    |
| GEOG 205  | (3) | Global Change: Past, Present and Future                 |
| GEOG 272  | (3) | Earth's Changing Surface                                |
| GEOG 308  | (3) | Principles of Remote Sensing                            |
| GEOG 321  | (3) | Climatic Environments                                   |
| GEOG 322* | (3) | Environmental Hydrology                                 |
| GEOG 372  | (3) | Running Water Environments                              |
| GEOG 470  | (3) | Wetlands  |
| LSCI 230* | (3) | Introductory Microbiology                               |
| MICR 331  | (3) | Microbial Ecology                                       |
| MIME 308  | (3) | Social Impact of Technology                             |
| MIME 320  | (3) | Extraction of Energy Resources                          |
| MIMM 211* | (3) | Introductory Microbiology                               |
| MIMM 214  | (3) | Introductory Immunology: Elements of Immunity           |
| MIMM 323  | (3) | Microbial Physiology                                    |
| MIMM 324  | (3) | Fundamental Virology                                    |
| NRSC 333  | (3) | Pollution and Bioremediation                            |
| NRSC 340  | (3) | Global Perspectives on Food                             |
| NRSC 510  | (3) | Agricultural Micrometeorology                           |
| NRSC 514  | (3) | Freshwater Ecosystems                                   |
| PARA 410  | (3) | Environment and Infection                               |
| PARA 515  | (3) | Water, Health and Sanitation                            |
| PLNT 304  | (3) | Biology of Fungi  |
| PLNT 305  | (3) | Plant Pathology   |
| PLNT 358  | (3) | Flowering Plant Diversity                               |
| PLNT 426  | (3) | Plant Ecophysiology                                     |
| PLNT 460  | (3) | Plant Ecology   |
| SOIL 300  | (3) | Geosystems  |
| WILD 421  | (3) | Wildlife Conservation                                   |

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## 8 B.A. Faculty Program in Environment

The B.A. Faculty Program has two components: Core and Domain. Students follow three steps in their degree program.

1. **Core:** The Core consists of four introductory courses and one intermediate-level course where students are exposed to the different approaches, perspectives, and world views that will help them gain an understanding of the complexity and conflicts that underlie most environmental problems. Through the core program, students go beyond the confines of their individual views of environment.
2. **Domain:** Domains provide a trans-disciplinary study of a particular theme or:

**Basic Science**

3 credits of basic science from the following, or equivalent (e.g., CEGEP objective 00UK):

|          |     |                                |
|----------|-----|--------------------------------|
| AEBI 120 | (3) | General Biology                |
| BIOL 111 | (3) | Principles: Organismal Biology |

**Suggested First Year (U1) Courses**

For suggestions on courses to take in your first year (U1), you can consult the "MSE Student Handbook 2012-2013" available on the MSE website (<http://www.mcgill.ca/mse>), or contact Kathy Roulet, the Program Adviser ([kathy.roulet@mcgill.ca](mailto:kathy.roulet@mcgill.ca)).

**Program Requirements**

Note: Students are required to take a maximum of 30 credits at the 200 level and a minimum of 12 credits at the 400 level or higher in this program. This includes core and required courses, but does not include the program prerequisites or corequisites listed above.

Location Note: When planning your schedule and registering for courses, you should verify where each course is offered because courses for this program are taught at both McGill's Downtown campus and at the Macdonald campus in Sainte-Anne-de-Bellevue.

**Core: Required Courses (18 credits)**

Location Note: Core required courses are taught at both McGill's Downtown campus and at the Macdonald campus in Sainte-Anne-de-Bellevue. You should register in Section 001 of an ENVR course that you plan to take on the Downtown campus, and in Section 051 of an ENVR course that you plan to take on the Macdonald campus.

|          |     |   |
|----------|-----|---|
| ENVR 200 | (3) | The Global Environment                  |
| ENVR 201 | (3) | Society, Environment and Sustainability |
| ENVR 202 | (3) | The Evolving Earth                      |
| ENVR 203 | (3) | Knowledge, Ethics and Environment       |
| ENVR 301 | (3) | Environmental Research Design           |
| ENVR 400 | (3) | Environmental Thought                   |

**Core: Complementary Course - Senior Research Project (3 credits)**

Only 3 credits will be applied to the program; extra credits will count as electives.

|          |     |                                    |
|----------|-----|------------------------------------|
| AEBI 427 | (6) | Barbados Interdisciplinary Project |
| AGRI 519 | (6) | Sustainable Development Plans      |
| ENVR 401 | (3) | Environmental Research             |
| ENVR 451 | (6) | Research in Panama                 |

**Complementary Courses (33 credits)**

33 credits of complementary courses are chosen as follows:

18 credits of Fundamentals, maximum 3 credits from any one category

9 credits from List A

6 credits from List B

**Fundamentals:**

18 credits of Fundamentals (3 credits from each category):

**Health and Environment**

|          |     |                        |
|----------|-----|------------------------|
| GEOG 221 | (3) | Environment and Health |
| NRSC 221 | (3) | Environment and Health |

**Health and Infection**

|          |     |  |
|----------|-----|--|
| GEOG 403 | (3) | Global Health and Environmental Change |
| GEOG 493 | (3) | Health and Environment in Africa       |
| PARA 410 | (3) | Environment and Infection              |

**Health and Pollution**

|          |     |                              |
|----------|-----|------------------------------|
| ANTH 227 | (3) | Medical Anthropology         |
| NRSC 333 | (3) | Pollution and Bioremediation |

**Economics**

|          |     |   |
|----------|-----|---|
| AGEC 200 | (3) | Principles of Microeconomics            |
| ECON 208 | (3) | Microeconomic Analysis and Applications |

**Nutrition**

|          |     |                        |
|----------|-----|------------------------|
| EDKP 292 | (3) | Nutrition and Wellness |
| NUTR 200 | (3) | Contemporary Nutrition |
| NUTR 207 | (3) | Nutrition and Health   |

**Statistics**

One of the following Statistics courses or equivalent:

Note: Credit given for Statistics courses is subject to certain restrictions. Students should consult the "Course Ov

|           |     |                               |
|-----------|-----|-------------------------------|
| GEOG 321  | (3) | Climatic Environments         |
| GEOG 322* | (3) | Environmental Hydrology       |
| NRSC 510  | (3) | Agricultural Micrometeorology |

### **Agriculture**

|          |     |  |
|----------|-----|--|
| AEBI 425 | (3) | Tropical Energy and Food                           |
| AGRI 340 | (3) | Principles of Ecological Agriculture               |
| AGRI 411 | (3) | Global Issues on Development, Food and Agriculture |
| AGRI 550 | (3) | Sustained Tropical Agriculture                     |

### **Decision Making**

|          |     |                                      |
|----------|-----|--------------------------------------|
| AGEC 242 | (3) | Management Theories and Practices    |
| BTEC 502 | (3) | Biotechnology Ethics and Society     |
| ECON 440 | (3) | Health Economics                     |
| PHIL 343 | (3) | Biomedical Ethics                    |
| RELG 270 | (3) | Religious Ethics and the Environment |
| URBP 507 | (3) | Planning and Infrastructure          |

### **Biology Fundamentals:**

\* You may take BIOL 308 or ENVB 305, but not both.

|           |     |                                |
|-----------|-----|--------------------------------|
| AEBI 210  | (3) | Organisms 1                    |
| AEBI 211  | (3) | Organisms 2                    |
| BIOL 200  | (3) | Molecular Biology              |
| BIOL 205  | (3) | Biology of Organisms           |
| BIOL 308* | (3) | Ecological Dynamics            |
| ENVB 305* | (3) | Population & Community Ecology |
| LSCI 211  | (3) | Biochemistry 1                 |

### **Development and Ecology**

|          |     |                                  |
|----------|-----|----------------------------------|
| ANTH 212 | (3) | Anthropology of Development      |
| ANTH 339 | (3) | Ecological Anthropology          |
| ANTH 512 | (3) | Political Ecology                |
| GEOG 300 | (3) | Human Ecology in Geography       |
| GEOG 310 | (3) | Development and Livelihoods      |
| SOCI 254 | (3) | Development and Underdevelopment |
| SOCI 365 | (3) | Health and Development           |



|           |     |   |
|-----------|-----|---|
| AEBI 421  | (3) | Tropical Horticultural Ecology                |
| BIOL 451  | (3) | Research in Ecology and Development in Africa |
| BIOL 465* | (3) | Conservation Biology                          |
| BIOL 553  | (3) | Neotropical Environments                      |
| ENVB 410  | (3) | Ecosystem Ecology                             |
| NRSC 451  | (3) | Research in Ecology and Development In Africa |
| WILD 421* | (3) | Wildlife Conservation                         |

### **Pest Management**

|          |     |                            |
|----------|-----|----------------------------|
| BIOL 350 | (3) | Insect Biology and Control |
| ENTO 350 | (3) | Insect Biology and Control |
| ENTO 352 | (3) | Biocontrol of Pest Insects |

### **Techniques and Management**

\* You may take ENVB 430 or GEOG 201, but not both.

|           |     |                                      |
|-----------|-----|--------------------------------------|
| AEBI 423  | (3) | Sustainable Land Use                 |
| CHEE 230  | (3) | Environmental Aspects of Technology  |
| ENVB 430* | (3) | GIS for Natural Resource Management  |
| GEOG 201* | (3) | Introductory Geo-Information Science |
| GEOG 302  | (3) | Environmental Management 1           |
| GEOG 404  | (3) | Environmental Management 2           |
| PARA 515  | (3) | Water, Health and Sanitation         |

### **Social Change**

|          |     |   |
|----------|-----|---|
| GEOG 406 | (3) | Human Dimensions of Climate Change          |
| GEOG 514 | (3) | Climate Change Vulnerability and Adaptation |
| HIST 249 | (3) | Health and the Healer in Western History    |
| SOCI 307 | (3) | Sociology of Globalization                  |
| URBP 520 | (3) | Globalization: Planning and Change          |

### **Immunology and Infectious Disease**

|                  |     |                         |
|------------------|-----|-------------------------|
| MIMM 314         | (3) | Intermediate Immunology |
| MIMM 323t91I93gy | (3) | Fundamental Virology    |

|          |     |  |
|----------|-----|--|
| GEOG 451 | (3) | Research in Society and Development in Africa  |
| GEOG 498 | (3) | Humans in Tropical Environments                |
| HIST 335 | (3) | Science and Medicine in Canada                 |
| HIST 510 | (3) | Environmental History of Latin America (Field) |
| PSYC 533 | (3) | International Health Psychology                |
| SOCI 520 | (3) | Migration and Immigrant Groups                 |
| SOCI 525 | (3) | Health Care Systems in Comparative Perspective |

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For suggestions on courses to take in your first year (U1), you can consult the "MSE Student Handbook" available on the MSE website (<http://www.mcgill.ca/mse>), or contact Ms. Kathy Roulet, the Program Adviser ([kathy.roulet@mcgill.ca](mailto:kathy.roulet@mcgill.ca)).

|          |     |                                  |
|----------|-----|----------------------------------|
| AGEC 333 | (3) | Resource Economics               |
| ECON 326 | (3) | Ecological Economics             |
| ECON 347 | (3) | Economics of Climate Change      |
| ECON 416 | (3) | Topics in Economic Development 2 |
| ECON 525 | (3) | Project Analysis                 |

**Advanced Courses**

9 credits from:

\* Note: You can take BREE 217 or GEOG 322 but not both; you can take ENVB 305 or BIOL 308 but not both.

|           |     |  |
|-----------|-----|--|
| AEBI 423  | (3) | Sustainable Land Use                           |
| AGRI 435  | (3) | Soil and Water Quality Management              |
| AGRI 452  | (3) | Water Resources in Barbados                    |
| AGRI 550  | (3) | Sustained Tropical Agriculture                 |
| ANTH 339  | (3) | Ecological Anthropology                        |
| ANTH 451  | (3) | Research in Society and Development in Africa  |
| BIOL 305  | (3) | Animal Diversity                               |
| BIOL 308* | (3) | Ecological Dynamics                            |
| BIOL 451  | (3) | Research in Ecology and Development in Africa  |
| BREE 217* | (3) | Hydrology and Water Resources                  |
| ECON 305  | (3) | Industrial Organization                        |
| ECON 313  | (3) | Economic Development 1                         |
| ECON 314  | (3) | Economic Development 2                         |
| ECON 408  | (3) | Public Sector Economics 1                      |
| ECON 409  | (3) | Public Sector Economics 2                      |
| ENVB 305* | (3) | Population & Community Ecology                 |
| ENVB 437  | (3) | Assessing Environmental Impact                 |
| EPSC 355  | (3) | Sedimentary Geology                            |
| EPSC 549  | (3) | Hydrogeology                                   |
| GEOG 302  | (3) | Environmental Management 1                     |
| GEOG 322* | (3) | Environmental Hydrology                        |
| GEOG 404  | (3) | Environmental Management 2                     |
| GEOG 451* | (3) | Research in Society and Development in Africa  |
| GEOG 498  | (3) | Humans in Tropical Environments                |
| HIST 510  | (3) | Environmental History of Latin America (Field) |
| NRSC 451  | (3) | Research in Ecology and Development In Africa  |
| SOIL 510  | (3) | Environmental Soil Chemistry                   |
| URBP 507  | (3) | Planning and Infrastructure                    |
| URBP 520  | (3) | Globalization: Planning and Change             |

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**8.3 Environment and Development Domain**

This domain is open only to students in the B.A. Faculty Program in Environment.

**Adviser**

Ms. Kathy Roulet  
Telephone: 514-398-4306  
Email: [kathy.roulet@mcgill.ca](mailto:kathy.roulet@mcgill.ca)

**Mentor**

Prof. Gregory Mikkelson  
Telephone: 514-398-4583  
Email: [gregory.mikkelson@mcgill.ca](mailto:gregory.mikkelson@mcgill.ca)

**8.3.1 Bachelor of Arts (B.A.) - Faculty Program Environment - Environment and Development (54 credits)**

The quest for sustainable paths to economic development requires scholars and practitioners to transcend the boundaries of traditional disciplines. This domain offers students sufficient depth and breadth of study to acquire a strong grasp of current theories, concepts, and approaches to environment and development. It prepares them for graduate study in interdisciplinary programs (e.g., development studies or environmental studies) as well as in integrative social sciences (e.g., anthropology, geography, etc.).

**Program Prerequisites or Corequisites**

To graduate from the Faculty Program in Environment, students are required to complete these courses by the end of their U1 year. These courses can be taken using the Satisfactory/Unsatisfactory option. See: [http://www.mcgill.ca/study/university\\_regulations\\_and\\_resources/undergraduate/gi\\_courses\\_taken\\_under\\_the\\_satisfactory\\_unsatisfactory\\_option](http://www.mcgill.ca/study/university_regulations_and_resources/undergraduate/gi_courses_taken_under_the_satisfactory_unsatisfactory_option) for details.

**Calculus**

3 credits of calculus from the following, or equivalent (e.g., CEGEP objective OOUN):

|          |     |                             |
|----------|-----|-----------------------------|
| MATH 139 | (4) | Calculus 1 with Precalculus |
| MATH 140 | (3) | Calculus 1                  |

**Basic Science**

3 credits of basic science from the following, or equivalent (e.g., CEGEP objectives: Biology OOUK, Chemistry OOUL, Physics OOUR):

|          |     |                                  |
|----------|-----|----------------------------------|
| BIOL 111 | (3) | Principles: Organismal Biology   |
| CHEM 110 | (4) | General Chemistry 1              |
| PHYS 101 | (4) | Introductory Physics - Mechanics |

**Suggested First Year (U1) Courses**

For suggestions on courses to take in your first year (U1), you can consult the "MSE Student Handbook 2012-2013" available on the MSE website (<http://www.mcgill.ca/mse>), or contact Ms. Kathy Roulet, the Program Adviser ([kathy.roulet@mcgill.ca](mailto:kathy.roulet@mcgill.ca)).

**Program Requirements**

Note: Students are required to tak

**Core: Complementary Course - Senior Research Project (3 credits)**

Only 3 credits will be applied to the program; extra credits will count as electives.

|          |     |                                    |
|----------|-----|------------------------------------|
| AEBI 427 | (6) | Barbados Interdisciplinary Project |
| AGRI 519 | (6) | Sustainable Development Plans      |
| ENVR 401 | (3) | Environmental Research             |
| ENVR 451 | (6) | Research in Panama                 |

**Domain: Required Courses (12 credits)**

|          |     |                            |
|----------|-----|----------------------------|
| ANTH 339 | (3) | Ecological Anthropology    |
| ECON 313 | (3) | Economic Development 1     |
| ECON 314 | (3) | Economic Development 2     |
| GEOG 302 | (3) | Environmental Management 1 |

**Domain: Complementary Courses (21 credits)**

21 credits of complementary courses are chosen from various categories as follows:

**Microeconomics**

One of:

|          |     |   |
|----------|-----|---|
| AGEC 200 | (3) | Principles of Microeconomics            |
| ECON 208 | (3) | Microeconomic Analysis and Applications |

**Statistics**

3 credits, one of the following Statistics courses or equivalent:

Note: Credit given for Statistics courses is subject to certain restrictions. Students should consult the "Course Overlap" information in the "Course Requirements" section for the Faculty of Arts.

|          |     |  |
|----------|-----|--|
| AEMA 310 | (3) | Statistical Methods 1                    |
| GEOG 202 | (3) | Statistics and Spatial Analysis          |
| MATH 203 | (3) | Principles of Statistics 1               |
| PSYC 204 | (3) | Introduction to Psychological Statistics |

**Advanced Development Courses**

6 credits from:

|          |     |   |
|----------|-----|---|
| AGEC 442 | (3) | Economics of International Agricultural Development |
| AGRI 411 | (3) | Global Issues on Development, Food and Agriculture  |
| GEOG 310 | (3) | Development and Livelihoods                         |
| GEOG 408 | (3) | Geography of Development                            |
| GEOG 409 | (3) | Geographies of Developing Asia                      |
| GEOG 410 | (3) | Geography of Underdevelopment: Current Problems     |
| URBP 520 | (3) | Globalization: Planning and Change                  |

**Natural Sciences**

3 credits from:



|          |     |  |
|----------|-----|--|
| GEOG 514 | (3) | Climate Change Vulnerability and Adaptation    |
| HIST 510 | (3) | Environmental History of Latin America (Field) |
| MGPO 440 | (3) | Strategies for Sustainability                  |

En



|          |     |                               |
|----------|-----|-------------------------------|
| ENVR 301 | (3) | Environmental Research Design |
| ENVR 400 | (3) | Environmental Thought         |

**Complementary Courses (36 credits)**

36 credits of complementary courses are selected as follows:

3 credits - Senior Research Project

3 credits - Statistics

30 credits - chosen from amongst 12 Areas of focus

**Senior Research Project**

Only 3 credits will be applied to the program; extra credits will count as electives.

|          |     |                               |
|----------|-----|-------------------------------|
| AGRI 519 | (6) | Sustainable Development Plans |
| ENVR 401 | (3) | Environmental Research        |
| ENVR 451 | (6) | Research in Panama            |

**Statistics:**

One of:

|          |     |  |
|----------|-----|--|
| AEMA 310 | (3) | Statistical Methods 1                    |
| BIOL 373 | (3) | Biometry                                 |
| GEOG 202 | (3) | Statistics and Spatial Analysis          |
| MATH 203 | (3) | Principles of Statistics 1               |
| PSYC 204 | (3) | Introduction to Psychological Statistics |

**Areas:**

30 credits from at least three of the following Areas. At least 6 credits must be at the 400 level or higher, selected either from these lists or in consultation with the Program Adviser.

**Area 1: Population, Community, and Ecosystem Ecology**

\* Note: You may take BIOL 540 or ENVR 540, but not both; you may take BIOL 308 or ENVB 305, but not both.

|           |     |                                |
|-----------|-----|--------------------------------|
| BIOL 308* | (3) | Ecological Dynamics            |
| BIOL 432  | (3) | Limnology                      |
| BIOL 441  | (3) | Biological Oceanography        |
| BIOL 540* | (3) | Ecology of Species Invasions   |
| ENVB 305* | (3) | Population & Community Ecology |
| ENVB 410  | (3) | Ecosystem Ecology              |
| ENVR 540* | (3) | Ecology of Species Invasions   |
| GEOG 350  | (3) | Ecological Biogeography        |
| PLNT 460  | (3) | Plant Ecology                  |

**Area 2: Biodiversity and Conservation**

|          |     |                            |
|----------|-----|----------------------------|
| BIOL 305 | (3) | Animal Diversity           |
| BIOL 355 | (3) | Trees: Ecology & Evolution |
| BIOL 427 | (3) | Herpetology                |
| BIOL 465 | (3) | Conservation Biology       |

|          |     |                                |
|----------|-----|--------------------------------|
| ENTO 440 | (3) | Insect Diversity               |
| MICR 331 | (3) | Microbial Ecology              |
| PLNT 358 | (3) | Flowering Plant Diversity      |
| WILD 307 | (3) | Natural History of Vertebrates |
| WILD 350 | (3) | Mammalogy                      |
| WILD 420 | (3) | Ornithology                    |

### **Area 3: Field Studies in Ecology and Conservation**

|          |     |                                    |
|----------|-----|------------------------------------|
| BIOL 240 | (3) | Monteregian Flora                  |
| BIOL 331 | (3) | Ecology/Behaviour Field Course     |
| BIOL 334 | (3) | Applied Tropical Ecology           |
| BIOL 553 | (3) | Neotropical Environments           |
| GEOG 495 | (3) | Field Studies - Physical Geography |
| GEOG 499 | (3) | Subarctic Field Studies            |
| WILD 475 | (3) | Desert Ecology                     |

### **Area 4: Hydrology and Water Resources**

\* Note: You may take only one of: GEOG 3222t6 BREE10.72t6 or CIVE2t63.

**Area 7: Economics**

\* Note: You may take AGECE 200 or ECON 208, but not both.

|            |     |   |
|------------|-----|---|
| AGECE 200* | (3) | Principles of Microeconomics            |
| AGECE 333  | (3) | Resource Economics                      |
| ECON 208*  | (3) | Microeconomic Analysis and Applications |
| ECON 326   | (3) | Ecological Economics                    |
| ECON 347   | (3) | Economics of Climate Change             |
| ECON 405   | (3) | Natural Resource Economics              |
| GEOG 216   | (3) | Geography of the World Economy          |

**Area 8: Development and Underdevelopment**

|          |     |   |
|----------|-----|---|
| ANTH 212 | (3) | Anthropology of Development                         |
| ECON 313 | (3) | Economic Development 1                              |
| ECON 314 | (3) | Economic Development 2                              |
| GEOG 408 | (3) | Geography of Development                            |
| GEOG 410 | (3) | Geography of Underdevelopment: Current Problems     |
| POLI 227 | (3) | Developing Areas/Introduction                       |
| POLI 445 | (3) | International Political Economy: Monetary Relations |

**Area 9: Cultures and People**

|          |     |                           |
|----------|-----|---------------------------|
| ANTH 206 | (3) | Environment and Culture   |
| ANTH 339 | (3) | Ecological Anthropology   |
| GEOG 210 | (3) | Global Places and Peoples |

**Area 10: Human Ecology and Health**

|          |     |                                       |
|----------|-----|---------------------------------------|
| ANTH 227 | (3) | Medical Anthropology                  |
| GEOG 300 | (3) | Human Ecology in Geography            |
| GEOG 303 | (3) | Health Geography                      |
| PHIL 343 | (3) | Biomedical Ethics                     |
| SOCI 225 | (3) | Medicine and Health in Modern Society |
| SOCI 309 | (3) | Health and Illness                    |

**Area 11: Spirituality, Philosophy, and Thought**

|          |     |   |
|----------|-----|---|
| EDER 461 | (3) | Society and Change                                  |
| PHIL 221 | (3) | Introduction to History and Philosophy of Science 2 |
| PHIL 237 | (3) | Contemporary Moral Issues                           |
| PHIL 341 | (3) | Philosophy of Science 1                             |
| PHIL 348 | (3) | Philosophy of Law 1                                 |
| RELG 270 | (3) | Religious Ethics and the Environment                |
| RELG 340 | (3) | Religion and the Sciences                           |
| RELG 370 | (3) | Religion and Human Rights                           |

## Area 12: Environmental Management

\* Note: If WILD 415 is taken, 1 additional credit of complementary courses must be taken.

|           |     |                                   |
|-----------|-----|-----------------------------------|
| AGRI 210  | (3) | Agro-Ecological History           |
| AGRI 435  | (3) | Soil and Water Quality Management |
| AGRI 452  | (3) | Water Resources in Barbados       |
| ENVB 437  | (3) | Assessing Environmental Impact    |
| GEOG 302  | (3) | Environmental Management 1        |
| GEOG 404  | (3) | Environmental Management 2        |
| NRSC 333  | (3) | Pollution and Bioremediation      |
| SOIL 335  | (3) | Soil Ecology and Management       |
| WILD 401  | (4) | Fisheries and Wildlife Management |
| WILD 415* | (2) | Conservation Law                  |
| WOOD 441  | (3) | Integrated Forest Management      |

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## 9.2 Bachelor of Arts and Science (B.A. & Sc.) – Interfaculty Program in Sustainability, Science and Society

The Interfaculty Program in Sustainability, Science and Society is open only to students in the B.A. & Sc. degree.

### Adviser

Adviser: Prof. Navin Ramankutty  
Telephone: 514-398-8428  
Email: [navin.ramankutty@mcgill.ca](mailto:navin.ramankutty@mcgill.ca)

For further information about this program, see *Programs, Courses and University Regulations > Faculties & Schools > Bachelor of Arts and Science > Undergraduate > Academic Programs > Sustainability, Science and Society > : Bachelor of Arts and Science (B.A. & Sc.) - Interfaculty Program in Sustainability, Science and Society (54 credits)*.

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Major in EnvirSo 0 ps.(So 0 pr)Tj1 ps.(So 0 pr)T.erfa(Ag. 1 265.049 638.86.956(vir)Tj1 0 0 275.085 366.82

- 3. Senior Core and Research:** In the two senior courses of the core, students will apply the general and specialized knowledge that they have gained in the program to the analysis of some specific, contemporary environmental problems.

To obtain a Major in Environment, students must:

- register in a domain online using Minerva;
- pass all courses counted toward the Major with **a grade of C or higher**;
- confirm that their course selection satisfies the required components of the MSE core and their chosen domain, and that the complementary courses are approved courses in their chosen domain; and
- fulfil all faculty requirements as specified by the faculty in which they are registered: for the B.Sc.(Ag.Env.Sc.), refer to *Programs, Courses and University Regulations > Faculties & Schools > Faculty of Agricultural and Environmental Sciences > Undergraduate > : Faculty Information and Regulations*; for the B.Sc., see *Programs, Courses and University Regulations > Faculties & Schools > Faculty of Science >: Faculty Degree Requirements*. This includes meeting the minimum credit requirement as specified in their letter of admission.

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## 10.1 Biodiversity and Conservation Domain

This domain is open only to students in the B.Sc.(Ag.Env.Sc.) Major Environment or B.Sc. Major Environment program.

| Adviser  | Mentor  |
|--|---|
| Ms. Kathy Roulet<br>Telephone: 514-398-4306<br>Email: <a href="mailto:kathy.roulet@mcgill.ca">kathy.roulet@mcgill.ca</a> | Professor Graham Bell<br>Telephone: 514-398-6485<br>Email: <a href="mailto:graham.bell@mcgill.ca">graham.bell@mcgill.ca</a> |

### 10.1.1 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) or Bachelor of Science (B.Sc.) - Major Environment - Biodiversity and Conservation (63 credits)

This domain (63 credits including core) is open only to students in the B.Sc.(Ag.Env.Sc.) Major in Environment or B.Sc. Major in Environment program.

This domain links the academic study of biological diversity with the applied field of conserv

ENVR 400 (3) Environmental Thought

**Core: Complementary Course - Senior Research Project (3 credits)**

Only 3 credits will be applied to the program; extra credits will count as electives.

AGRI 519 (6) Sustainable Development Plans

ENVR 401 (3) Environmental Research

ENVR 451 (6) Research in Panama

**Domain: Complementary Courses (42 credits)**

42 credits of complementary courses are selected as follows:

9 credits - basic courses in the Biological Principles of Diversity, Systematics, and Conservation

3 credits - Ecology

3 credits - Statistics

9 credits - Interface between Science, Policy, and Management

3 credits - Field Courses

6 credits - General Scientific Principles

3 credits - Social Science

6 credits - Organisms and Diversity

**Biological Principles of Diversity/Systematics/Conservation:**

9 credits are chosen from basic courses in the biological principles of diversity, systematics, and conservation as follows:

One of:

AEBI 212 (3) Evolution and Phylogeny

BIOL 304 (3) Evolution

One of:

AEBI 211 (3) Organisms 2

BIOL 3051 0 0 1 70.52 366.ppt(One of: 9 credits - Interf

BIOL 373 (3) Biometry

### Science, Policy, and Management:

9 credits are chosen from interface between science, policy, and management as follows:

\* Note: You may take AGECE 200 or ECON 208, but not both.

|            |     |   |
|------------|-----|---|
| AGECE 200* | (3) | Principles of Microeconomics                    |
| AGRI 550   | (3) | Sustained Tropical Agriculture                  |
| ECON 208*  | (3) | Microeconomic Analysis and Applications         |
| ECON 225   | (3) | Economics of the Environment                    |
| GEOG 302   | (3) | Environmental Management 1                      |
| GEOG 370   | (3) | Protected Areas                                 |
| GEOG 408   | (3) | Geography of Development                        |
| GEOG 410   | (3) | Geography of Underdevelopment: Current Problems |

### Field Courses

One of:

|          |     |                                    |
|----------|-----|------------------------------------|
| AGRI 452 | (3) | Water Resources in Barbados        |
| BIOL 331 | (3) | Ecology/Behaviour Field Course     |
| BIOL 334 | (3) | Applied Tropical Ecology           |
| BIOL 553 | (3) | Neotropical Environments           |
| GEOG 495 | (3) | Field Studies - Physical Geography |
| GEOG 499 | (3) | Subarctic Field Studies            |
| WILD 475 | (3) | Desert Ecology                     |

### General Scientific Principles

6 credits of general scientific principles selected from the following:

\* Note: You may take ENVB 430 or GEOG 306, but not both.

(A second field course from the domain curriculum may also be taken.)

\*\* Note: You may take BIOL 432 or ENVB 315, but not both.

|            |     |                            |
|------------|-----|----------------------------|
| BIOL 324   | (3) | Ecological Genetics        |
| BIOL 342   | (3) | Marine Biology             |
| BIOL 432** | (3) | Limnology                  |
| BIOL 441   | (3) | Biological Oceanography    |
| ENVB 313   | (3) | Phylogeny and Biogeography |

|          |     |                                |
|----------|-----|--------------------------------|
| MICR 331 | (3) | Microbial Ecology              |
| PLNT 460 | (3) | Plant Ecology                  |
| WILD 311 | (3) | Ethology                       |
| WOOD 420 | (3) | Environmental Issues: Forestry |

**Social Science:**

One of:

\* Note: If WILD 415 is taken, 1 additional credit of complementary courses must be taken.

|          |     |                          |
|----------|-----|--------------------------|
| AGEC 333 | (3) | Resource Economics       |
| ANTH 339 | (3) | Ecological Anthropology  |
|          |     | Environment/Development: |



**Adviser**

Ms. Kathy Roulet  
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**Mentor**

Professor Marilyn Scott  
Telephone: 514-398-7996  
Email: [marilyn.scott@mcgill.ca](mailto:marilyn.scott@mcgill.ca)

**10.2.1 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) or Bachelor of Science (B.Sc.) - Major Environment - Ecological Determinants of Health - Cellular (63 credits)**

The Cellular concentration in this domain is open only to students in the B.Sc.(Ag.Env.Sc.) Major Environment or B.Sc. Major Environment program.

This domain considers the interface between the environment and human well-being, with particular focus on the triad that ties human health to the environment through the elements of food and infectious agents. Each of these elements is influenced by planned and unplanned environmental disturbances. For example, agricultural practices shift the balance between beneficial and harmful ingredients of food. Use of insecticides presents dilemmas with regard to the environment, economics, and human health. The distrib

**Domain: Complementary Courses (39 credits)**

39 credits of the complementary courses are selected as follows:

21 credits - Fundamentals, 3 credits from each category

12 credits - Human Health, maximum of 3 credits from any one category

6 credits - Natural Environment, maximum of 3 credits from any one category

**Fundamentals:**

21 credits of Fundamentals, 3 credits from each category.

**Health, Society, and Environment**

\* Note: You may take GEOG 221 or NRSC 221, but not both.

|           |     |                        |
|-----------|-----|------------------------|
| GEOG 221* | (3) | Environment and Health |
| GEOG 303  | (3) | Health Geography       |
| NRSC 221* | (3) | Environment and Health |
| SOCI 234  | (3) | Population and Society |
| SOCI 309  | (3) | Health and Illness     |

**Toxicology**

|          |     |                           |
|----------|-----|---------------------------|
| ANSC 312 | (3) | Animal Health and Disease |
| PHAR 303 | (3) | Principles of Toxicology  |

**Cellular Biology**

|          |     |                             |
|----------|-----|-----------------------------|
| ANSC 234 | (3) | Biochemistry 2              |
| BIOL 201 | (3) | Cell Biology and Metabolism |
| LSCI 202 | (3) | Molecular Cell Biology      |

**Genetics**

|          |     |                |
|----------|-----|----------------|
| BIOL 202 | (3) | Basic Genetics |
| LSCI 204 | (3) | Genetics       |

**Molecular Biology**

|          |     |                   |
|----------|-----|-------------------|
| BIOL 200 | (3) | Molecular Biology |
| LSCI 211 | (3) | Biochemistry 1    |

**Statistics**

One of the following Statistics courses or equivalent:

Note: Credit given for Statistics courses is subject to certain restrictions. Students in Science should consult the "Course Overlap" information in the "Course Requirements" section for the Faculty of Science.

|          |     |                            |
|----------|-----|----------------------------|
| AEMA 310 | (3) | Statistical Methods 1      |
| MATH 203 | (3) | Principles of Statistics 1 |

**Nutrition**

\* Note: NUTR 307 - Video conference Downtown and at the Macdonald campus.

|           |     |                           |
|-----------|-----|---------------------------|
| ANSC 330  | (3) | Fundamentals of Nutrition |
| NUTR 307* | (3) | Human Nutrition           |

**Human Health:**

12 credits chosen from Human Health, maximum of 3 credits from any one category:

**Immunology and Pathogenicity**

|          |     |   |
|----------|-----|---|
| MICR 341 | (3) | Mechanisms of Pathogenicity                   |
| MIMM 214 | (3) | Introductory Immunology: Elements of Immunity |
| PARA 438 | (3) | Immunology                                    |
| PATH 300 | (3) | Human Disease                                 |

**Infectious Disease**

|          |     |                              |
|----------|-----|------------------------------|
| ANSC 400 | (3) | Eukaryotic Cells and Viruses |
| MIMM 324 | (3) | Fundamental Virology         |
| MIMM 413 | (3) | Parasitology                 |
| WILD 424 | (3) | Parasitology                 |

**Nutrition**

|          |     |                                 |
|----------|-----|---------------------------------|
| NUTR 403 | (3) | Nutrition in Society            |
| NUTR 512 | (3) | Herbs, Foods and Phytochemicals |

**Drugs and Hormones**

|          |     |                                     |
|----------|-----|-------------------------------------|
| BREE 322 | (3) | Organic Waste Management            |
| CHEE 230 | (3) | Environmental Aspects of Technology |
| ENVB 437 | (3) | Assessing Environmental Impact      |
| GEOG 302 | (3) | Environmental Management 1          |
| URBP 507 | (3) | Planning and Infrastructure         |

### **Pest Management**

\* Note: You may take BIOL 350 or ENTO 350, but not both.

|           |     |                            |
|-----------|-----|----------------------------|
| BIOL 350* | (3) | Insect Biology and Control |
| ENTO 350* | (3) | Insect Biology and Control |
| ENTO 352  | (3) | Biocontrol of Pest Insects |

### **Pollution Control and Management**

|          |     |                              |
|----------|-----|------------------------------|
| BREE 518 | (3) | Bio-Treatment of Wastes      |
| NRSC 333 | (3) | Pollution and Bioremediation |

### **Ecology**

\* Note: You may take ENVR 540 or BIOL 540, but not both.

|           |     |                              |
|-----------|-----|------------------------------|
| BIOL 432  | (3) | Limnology                    |
| BIOL 465  | (3) | Conservation Biology         |
| BIOL 540* | (3) | Ecology of Species Invasions |
| BIOL 553  | (3) | Neotropical Environments     |
| ENVB 410  | (3) | Ecosystem Ecology            |
| ENVR 540* | (3) | Ecology of Species Invasions |
| MICR 331  | (3) | Microbial Ecology            |
| PLNT 304  | (3) | Biology of Fungi             |
| PLNT 460  | (3) | Plant Ecology                |

## **10.2.2 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) or Bachelor of Science (B.Sc.)- Major Environment - Ecological Determinants of Health - Population (63 credits)**

The Population concentration in this domain is open only to students in the B.Sc.(Ag.Env.Sc.) Major Environment or B.Sc. Major Environment program.

This domain considers the interface between the environment and human well-being, with particular focus on the triad that ties human health to the environment through the elements of food and infectious agents. Each of these elements is influenced by planned and unplanned environmental disturbances. For example, agricultural practices shift the balance between beneficial and harmful ingredients of food. Use of insecticides presents dilemmas with regard to the environment, economics, and human health. The distribution of infectious diseases is influenced by the climatic conditions that permit vectors to coexist with humans, by deforestation, by urbanization, and by human interventions ranging from the building of dams to provision of potable water.

In designing interventions that aim to prevent or reduce infectious contaminants in the environment, or to improve food production and nutritional quality, not only is it important to understand methods of intervention, but also to understand social forces that influence how humans respond to such interventions.

Students in the Population concentration will gain a depth of understanding at an ecosystem level that looks at society, land, and population health. Students in the Cellular concentration will explore these interactions in more depth, at a physiological level.

### **Suggested First Year (U1) Courses**

For suggestions on courses to take in your first year (U1), you can consult the "MSE Student Handbook 2013-2014" available on the MSE website (<http://www.mcgill.ca/mse>), or contact Ms. Kathy Roulet, the Program Adviser ([kathy.roulet@mcgill.ca](mailto:kathy.roulet@mcgill.ca)).

### **Program Requirements**



PHAR 303 (3) Principles of Toxicology

### **Biology**

BIOL 200 (3) Molecular Biology  
BIOL 201 (3) Cell Biology and Metabolism  
LSCI 211 (3) Biochemistry 1

### **Statistics**

One of the following Statistics courses or equivalent:

Note: Credit given for Statistics courses is subject to certain restrictions. Students in Science should consult the "Course Overlap" information in the "Course Requirements" section for the Faculty of Science.

AEMA 310 (3) Statistical Methods 1  
MATH 203 (3) Principles of Statistics 1

### **Nutrition**

\* Note: NUTR 307 (Video conference Downtown and at the Macdonald campus)

ANSC 330 (3) Fundamentals of Nutrition  
NUTR 207 (3) Nutrition and Health  
NUTR 307\* (3) Human Nutrition

### **Advanced Ecology**

\* Note: You may take ENVR 540 or BIOL 540, but not both.

BIOL 465 (3) Conservation Biology  
BIOL 540\* (3) Ecology of Species Invasions  
BIOL 553 (3) Neotropical Environments  
ENVB 410 (3) Ecosystem Ecology  
ENVB 506 (3) Quantitative Methods: Ecology  
ENVR 540\* (3) Ecology of Species Invasions  
MICR 331 (3) Microbial Ecology  
PLNT 460 (3) Plant Ecology

### **List A:**

6 credits from the following List A categories, maximum of 3 credits from any one category:

### **Hydrology, Climate, and Agriculture**

\* Note: You may take BREE 217 or GEOG 322, but not both.

AGRI 340 (3) Principles of Ecological Agriculture  
AGRI 452 (3) Water Resources in Barbados  
AGRI 550 (3) Sustained Tropical Agriculture  
BREE 217\* (3) Hydrology and Water Resources  
GEOG 321 (3) Climatic Environments  
GEOG 322\* (3) Environmental Hydrology  
NRSC 510 (3) Agricultural Micrometeorology

**Decision Making and Social Change**

\* Note: You may take AGEC 200 or ECON 208, but not both.

|           |     |   |
|-----------|-----|---|
| AGEC 200* | (3) | Principles of Microeconomics            |
| AGEC 242  | (3) | Management Theories and Practices       |
| BTEC 502  | (3) | Biotechnology Ethics and Society        |
| ECON 208* | (3) | Microeconomic Analysis and Applications |
| EDER 461  | (3) | Society and Change                      |
| GEOG 302  | (3) | Environmental Management 1              |
| GEOG 404  | (3) | Environmental Management 2              |
| PHIL 343  | (3) | Biomedical Ethics                       |
| URBP 520  | (3) | Globalization: Planning and Change      |

**Development and History**

|          |     |                                  |
|----------|-----|----------------------------------|
| AGRI 210 | (3) | Agro-Ecological History          |
| ANTH 212 | (3) | Anthropology of Development      |
| HIST 292 | (3) | History and the Environment      |
| SOCI 254 | (3) | Development and Underdevelopment |

**List B:**

12 credits from the following List B categories, maximum of 3 credits from any one category:

**Techniques and Management**

\* Note: You may take ENVB 430 or GEOG 201, but not both.

|           |     |                                      |
|-----------|-----|--------------------------------------|
| CHEE 230  | (3) | Environmental Aspects of Technology  |
| ENVB 430* | (3) | GIS for Natural Resource Management  |
| ENVB 437  | (3) | Assessing Environmental Impact       |
| GEOG 201* | (3) | Introductory Geo-Information Science |
| URBP 507  | (3) | Planning and Infrastructure          |

**Immunology and Infectious Disease**

|          |     |   |
|----------|-----|---|
| ANSC 400 | (3) | Eukaryotic Cells and Viruses                  |
| MIMM 214 | (3) | Introductory Immunology: Elements of Immunity |
| MIMM 324 | (3) | Fundamental Virology                          |
| MIMM 413 | (3) | Parasitology                                  |
| PARA 438 | (3) | Immunology                                    |
| WILD 424 | (3) | Parasitology                                  |

**Nutrition and Agriculture**

\* Note: NUTR 512 (Video conference Downtown and at the Macdonald campus)

|          |     |  |
|----------|-----|--|
| AGRI 411 | (3) | Global Issues on Development, Food and Agriculture |
| NUTR 403 | (3) | Nutrition in Society                               |
| NUTR 501 | (3) | Nutrition in Developing Countries                  |

NUTR 512\* (3) Herbs, Foods and Phytochemicals

#### Populations and Place

CANS 407 (3) Regions of Canada  
GEOG 300 (3) Human Ecology in Geography  
GEOG 498 (3) Humans in Tropical Environments  
PSYC 533 (3) International Health Psychology

#### Pollution and Pest Management

BIOL 350 (3) Insect Biology and Control  
BREE 322 (3) Organic Waste Management  
ENTO 352 (3) Biocontrol of Pest Insects  
NRSC 333 (3) Pollution and Bioremediation

#### Genetics

BIOL 202 (3) Basic Genetics  
LSCI 204 (3) Genetics

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### 10.3 Environmetrics Domain

This domain is open only to students in the B.Sc.(Ag.Env.Sc.) Major Environment or B.Sc. Major Environment program.

| Adviser  | Mentor   |
|--|--|
| Ms. Kathy Roulet<br>Telephone: 514-398-4306<br>Email: <a href="mailto:kathy.roulet@mcgill.ca">kathy.roulet@mcgill.ca</a> | Professor Pierre Dutilleul<br>Telephone: 514-398-7870<br>Email: <a href="mailto:pierre.dutilleul@mcgill.ca">pierre.dutilleul@mcgill.ca</a> |

#### 10.3.1 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) or Bachelor of Science (B.Sc.) - Major Environment - Environmetrics (63 credits)

This domain (63 credits including core) is open only to students in the B.Sc.(Ag.Env.Sc.) Major in Environment or B.Sc. Major in Environment program.

In view of the crucial need for sound study design and appropriate statistical methods for analyzing environmental changes and their impacts on humans and various life forms and their ecological relationships, this program is intended to provide students with a strong background in the use of statistical methods of data analysis in environmental sciences.

Graduates will be capable of effectively participating in the design of environmental studies and adequately analyzing data for use by the environmental community. Accordingly, the list of courses for the Environmetrics Domain is composed primarily of statisticiiePmans and



Statistics courses BIOL 373 OR AEMA 310 can be taken in U1, but do not take them if you want to follow Option 1 (below), as they overlap with MATH 324.

### **Program Requirements**

Note: Students are required to take a maximum of 30 credits at the 200 level and a minimum of 12 credits at the 400 level or higher in this program. This includes core and required courses.

Location Note: When planning their schedule and registering for courses, students should verify where each course is offered because courses for this program are taught at both McGill's Downtown campus and at the Macdonald campus in Sainte-Anne-de-Bellevue.

### **Core: Required Courses (18 credits)**

Location Note: Core required courses for this program are taught at both McGill's Downtown campus and at the Macdonald campus in Sainte-Anne-de-Bellevue. You should register in Section 001 of an ENVR course if you want to take it on the Downtown campus, and in Section 051 of an ENVR course if you want to take it on the Macdonald campus.

|          |     |   |
|----------|-----|---|
| ENVR 200 | (3) | The Global Environment                  |
| ENVR 201 | (3) | Society, Environment and Sustainability |
| ENVR 202 | (3) | The Evolving Earth                      |
| ENVR 203 | (3) | Knowledge, Ethics and Environment       |
| ENVR 301 | (3) | Environmental Research Design           |
| ENVR 400 | (3) | Environmental Thought                   |

### **Core: Complementary Course - Senior Research Project (3 credits)**

Only 3 credits will be applied to the program; extra credits will count as electives.

|          |     |                               |
|----------|-----|-------------------------------|
| AGRI 519 | (6) | Sustainable Development Plans |
| ENVR 401 | (3) | Environmental Research        |
| ENVR 451 | (6) | Research in Panama            |

### **Domain: Required Courses (6 credits)**

|     |                      |
|-----|----------------------|
| (3) | Environmetrics Stage |
|-----|----------------------|

**Modelling**

|          |     |                                |
|----------|-----|--------------------------------|
| BIOL 309 | (3) | Mathematical Models in Biology |
| ENVB 506 | (3) | Quantitative Methods: Ecology  |

**GIS Techniques**

|          |     |                                      |
|----------|-----|--------------------------------------|
| ENVB 430 | (3) | GIS for Natural Resource Management  |
| GEOG 201 | (3) | Introductory Geo-Information Science |

**Basic Environmental Science:**

One of:

|          |     |                               |
|----------|-----|-------------------------------|
| BREE 217 | (3) | Hydrology and Water Resources |
| CIVE 323 | (3) | Hydrology and Water Resources |
| ENVB 210 | (3) | The Biophysical Environment   |
| GEOG 305 | (3) | Soils and Environment         |
| GEOG 322 | (3) | Environmental Hydrology       |
| GEOG 350 | (3) | Ecological Biogeography       |

**Statistics:**

6 credits of Statistics are selected from one of the following two options.

Note: Credit given for Statistics courses is subject to certain restrictions. Students in Science should consult the "Course Overlap" information in the "Course Requirements" section for the Faculty of Science. Several Statistics courses overlap (especially with MATH 324) and cannot be taken together. These rules do not apply to B.Sc.(Ag.Env.Sc.) students.

**Option 1**

|          |     |             |
|----------|-----|-------------|
| MATH 323 | (3) | Probability |
| MATH 324 | (3) | Statistics  |

**Option 2**

One of:

|          |     |                       |
|----------|-----|-----------------------|
| AEMA 310 | (3) | Statistical Methods 1 |
| BIOL 373 | (3) | Biometry              |

And one of:

|          |     |                             |
|----------|-----|-----------------------------|
| AEMA 411 | (3) | Experimental Designs 01     |
| CIVE 555 | (3) | Environmental Data Analysis |
| GEOG 351 | (3) | Quantitative Methods        |
| SOCI 461 | (3) | Quantitative Data Analysis  |

A total of 15 credits are chosen from the following two lists.

**List 1**

3 credits minimum of statistics and mathematics chosen from:

\* Note: or equivalent courses to BREE 252 or BREE 319.

|           |     |                                      |
|-----------|-----|--------------------------------------|
| BIOL 434  | (3) | Theoretical Ecology                  |
| BREE 252* | (3) | Computing for Engineers              |
| BREE 319* | (3) | Engineering Mathematics              |
| GEOG 501  | (3) | Modelling Environmental Systems      |
| MATH 223  | (3) | Linear Algebra                       |
| MATH 326  | (3) | Nonlinear Dynamics and Chaos         |
| MATH 423  | (3) | Regression and Analysis of Variance  |
| MATH 447  | (3) | Introduction to Stochastic Processes |
| MATH 525  | (4) | Sampling Theory and Applications     |
| SOCI 504  | (3) | Quantitative Methods 1               |
| SOCI 505  | (3) | Quantitative Methods 2               |
| SOCI 580  | (3) | Social Research Design and Practice  |

## List 2

3 credits minimum of environmental sciences chosen from:

|          |     |                                   |
|----------|-----|-----------------------------------|
| AGRI 452 | (3) | Water Resources in Barbados       |
| AGRI 550 | (3) | Sustained Tropical Agriculture    |
| BIOL 331 | (3) | Ecology/Behaviour Field Course    |
| BIOL 553 | (3) | Neotropical Environments          |
| ENVB 313 | (3) | Phylogeny and Biogeography        |
| GEOG 300 | (3) | Human Ecology in Geography        |
| GEOG 302 | (3) | Environmental Management 1        |
| GEOG 404 | (3) | Environmental Management 2        |
| GEOG 494 | (3) | Urban Field Studies               |
| GEOG 499 | (3) | Subarctic Field Studies           |
| NRSC 333 | (3) | Pollution and Bioremediation      |
| PLNT 460 | (3) | Plant Ecology                     |
| WILD 401 | (4) | Fisheries and Wildlife Management |
| WOOD 420 | (3) | Environmental Issues: Forestry    |

## 10.4 Food Production and Environment Domain

This domain is open only to students in the B.Sc.(Ag.Env.Sc.) Major Environment or B.Sc. Major Environment program.

| Adviser  | Mentor  |
|--|---|
| Ms. Kathy Roulet<br>Telephone: 514-398-4306<br>Email: <a href="mailto:kathy.roulet@mcgill.ca">kathy.roulet@mcgill.ca</a> | Professor Caroline Begg<br>Telephone: 514-398-8749<br>Email: <a href="mailto:caroline.begg@mcgill.ca">caroline.begg@mcgill.ca</a> |

### 10.4.1 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) or Bachelor of Science (B.Sc.) - Major Environment - Food Production and Environment (63 credits)

This domain (63 credits including core) is open only to students in the B.Sc.(Ag.Env.Sc.) Major in Environment or B.Sc. in Environment program.

The business of food production is an area of human activity with a large and intimate interaction with the environment. Modern agriculturalists must strike a delicate balance between trying to provide food for themselves, their families, and urban dwellers and trying to minimize environmental damage. When negative effects due to agricultural activities do occur, they are not usually the classic point-source ef

**Domain: Required Courses (9 credits)**

|          |     |                         |
|----------|-----|-------------------------|
| AEBI 210 | (3) | Organisms 1             |
| AGRI 210 | (3) | Agro-Ecological History |
| PLNT 300 | (3) | Cropping Systems        |

**Domain: Complementary Courses (33 credits)**

33 credits of complementary courses selected as follows:

15 credits - Basic Sciences

12 credits - Applied Sciences

6 credits - Social Sciences/Humanities

**Basic Sciences:**

15 credits of Basic Sciences selected as follows:

One of the following Statistics courses or equivalent:

Note: Credit given for Statistics courses is subject to certain restrictions. Students in Science should consult the "Course Overlap" information in the "Course Requirements" section for the Faculty of Science.

|          |     |                            |
|----------|-----|----------------------------|
| AEMA 310 | (3) | Statistical Methods 1      |
| MATH 203 | (3) | Principles of Statistics 1 |

One of:

|          |     |                                      |
|----------|-----|--------------------------------------|
| AGRI 340 | (3) | Principles of Ecological Agriculture |
| ANSC 250 | (3) | Principles of Animal Science         |

One of:

|          |     |                |
|----------|-----|----------------|
| BIOL 202 | (3) | Basic Genetics |
| LSCI 204 | (3) | Genetics       |

One of:

|          |     |                             |
|----------|-----|-----------------------------|
| ENVB 210 | (3) | The Biophysical Environment |
| GEOG 305 | (3) | Soils and Environment       |

One of:

|          |     |                                |
|----------|-----|--------------------------------|
| BIOL 308 | (3) | Ecological Dynamics            |
| ENVB 305 | (3) | Population & Community Ecology |

**Applied Sciences:**

12 credits of Applied Sciences from the following:

\* Note: You may take BREE 217 or GEOG 322, but not both; you may take FDSC 200 or NUTR 207, but not both.

|          |     |  |
|----------|-----|--|
| AGRI 411 | (3) | Global Issues on Development, Food and Agriculture |
| AGRI 435 | (3) | Soil and Water Quality Management                  |

|           |     |                                   |
|-----------|-----|-----------------------------------|
| AGRI 550  | (3) | Sustained Tropical Agriculture    |
| BIOL 465  | (3) | Conservation Biology              |
| BIOL 553  | (3) | Neotropical Environments          |
| BREE 217* | (3) | Hydrology and Water Resources     |
| BREE 322  | (3) | Organic Waste Management          |
| BREE 518  | (3) | Bio-Treatment of Wastes           |
| ENVB 437  | (3) | Assessing Environmental Impact    |
| FDSC 200* | (3) | Introduction to Food Science      |
| FDSC 535  | (3) | Food Biotechnology                |
| GEOG 302  | (3) | Environmental Management 1        |
| GEOG 322* | (3) | Environmental Hydrology           |
| MICR 331  | (3) | Microbial Ecology                 |
| NRSC 333  | (3) | Pollution and Bioremediation      |
| NUTR 207* | (3) | Nutrition and Health              |
| NUTR 403  | (3) | Nutrition in Society              |
| PARA 410  | (3) | Environment and Infection         |
| PHAR 303  | (3) | Principles of Toxicology          |
| PLNT 434  | (3) | Weed Biology and Control          |
| SOIL 315  | (3) | Soil Fertility and Fertilizer Use |
| SOIL 445  | (3) | Agroenvironmental Fertilizer Use  |
| SOIL 510  | (3) | Environmental Soil Chemistry      |
| WILD 401  | (4) | Fisheries and Wildlife Management |

### **Social Sciences/Humanities:**

6 credits in Social Sciences and Humanities are selected as follows:

\* Note: You may take AGEC 200 or ECON 208, but not both; you may take AGEC 333 or ECON 405, but not both.

\*\* Note: If WILD 415 is taken, 1 additional credit of complementary courses must be taken.

|           |     |   |
|-----------|-----|---|
| AGEC 200* | (3) | Principles of Microeconomics                        |
| AGEC 320  | (3) | Intermediate Microeconomic Theory                   |
| AGEC 333* | (3) | Resource Economics                                  |
| AGEC 430  | (3) | Agriculture, Food and Resource Policy               |
| AGEC 442  | (3) | Economics of International Agricultural Development |
| ECON 208* | (3) | Microeconomic Analysis and Applications             |
| ECON 225  | (3) | Economics of the Environment                        |
| ECON 405* | (3) | Natural Resource Economics                          |
| GEOG 404  | (3) | Environmental Management 2                          |
| GEOG 410  | (3) | Geography of Underdevelopment: Current Problems     |

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## **10.5 Land Surface Processes and Environmental Change Domain**

This domain is open only to students in the B.Sc.(Ag.Env

GEOG 203 (3) Environmental Systems

**Domain: Complementary Courses (39 credits)**

39 credits of complementary courses are selected as follows:

9 credits - 3 credits from each category of Statistics, GIS and Remote Sensing Techniques, Weather and Climate

9 credits of fundamental land surface processes

3 credits of environment and resource management

3 credits of field course

3 credits of social science

12 credits total of advanced studies chosen from List A: Particular Environments and List B: Surface Processes

**Statistics**

One of the following Statistics courses or equivalent:

Note: Credit given for Statistics courses is subject to certain restrictions. Students in Science should consult the "Course Overlap" information in the "Course Requirements" section for the Faculty of Science.

|          |     |                                 |
|----------|-----|---------------------------------|
| AEMA 310 | (3) | Statistical Methods 1           |
| GEOG 202 | (3) | Statistics and Spatial Analysis |
| MATH 203 | (3) | Principles of Statistics 1      |

**GIS and Remote Sensing Techniques**

One of:

|          |     |                                      |
|----------|-----|--------------------------------------|
| ENVB 430 | (3) | GIS for Natural Resource Management  |
| GEOG 201 | (3) | Introductory Geo-Information Science |
| GEOG 308 | (3) | Principles of Remote Sensing         |

**Weather and Climate**

One of:

|          |     |                             |
|----------|-----|-----------------------------|
| ATOC 215 | (3) | Oceans, Weather and Climate |
| ENVB 301 | (3) | Meteorology                 |

**Fundamental Land Surface Processes:**

9 credits of fundamental land surface processes chosen as follows:

|          |     |                       |
|----------|-----|-----------------------|
| GEOG 321 | (3) | Climatic Environments |
|----------|-----|-----------------------|

And/or one of:

Earth's Changing Surface





|          |     |                                    |
|----------|-----|------------------------------------|
| NRSC 221 | (3) | Environment and Health             |
| SOCI 565 | (3) | Social Change in Panama            |
| URBP 520 | (3) | Globalization: Planning and Change |

12 credits total of advanced studies chosen from the following two lists:

**List A - Particular Environments:**

3-9 credits of advanced study of Particular Environments:

\* Note: You may take BIOL 432 or ENVB 315, b

**10.6.1 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) or Bachelor of Science (B.Sc.) - Major Environment - Renewable Resource Management (63 credits)**

This domain (63 credits including core) is open only to students in the B.Sc.(Ag.Env.Sc.) Major in Environment or B.Sc. Major in Environment program.

Renewable resource management is an emerging field that focuses on the ecosystem structures and processes required to sustain the delivery, to humanity, of ecosystem goods and services such as food, clean water and air, essential nutrients, and the provision of beauty and inspiration. Renewable resource management recognizes humans as integral components of ecosystems and is used to develop goals that are consistent with sustainability and ecosystem maintenance.

The Renewable Resource Management domain provides students with an understanding of: 1) the interactions between physical and biological factors that determine the nature and dynamics of populations and entities in the natural en

|          |     |                        |
|----------|-----|------------------------|
| ENVR 401 | (3) | Environmental Research |
| ENVR 451 | (6) | Research in Panama     |

**Domain: Complementary Courses (42 credits)**

42 credits of complementary courses are selected as follows:

9 credits - Basic Principles of Ecosystem Processes and Diversity

6 credits - 3 credits from each category of Statistics and GIS

6 credits - Advanced Ecosystem Components

6 credits - Advanced Ecological Processes

6 credits - Social Processes

9 credits - Ecosystem Components or Management of Ecosystems

**Basic Principles of Ecosystem Processes:**

9 credits of basic principles of ecosystem processes and diversity are selected as follows:

One of:

|          |     |                  |
|----------|-----|------------------|
| AEBI 210 | (3) | Organisms 1      |
| AEBI 211 | (3) | Organisms 2      |
| BIOL 305 | (3) | Animal Diversity |

One of:

|          |     |                                |
|----------|-----|--------------------------------|
| BIOL 308 | (3) | Ecological Dynamics            |
| ENVB 305 | (3) | Population & Community Ecology |

One of:

|          |     |                             |
|----------|-----|-----------------------------|
| ENVB 210 | (3) | The Biophysical Environment |
| GEOG 305 | (3) | Soils and Environment       |

**Statistics**

One of:

|          |     |                       |
|----------|-----|-----------------------|
| AEMA 310 | (3) | Statistical Methods 1 |
| BIOL 373 | (3) | Biometry              |

**GIS Methods**

One of:

|          |     |                                      |
|----------|-----|--------------------------------------|
| ENVB 430 | (3) | GIS for Natural Resource Management  |
| GEOG 201 | (3) | Introductory Geo-Information Science |

**Advanced Ecosystem Components:**

6 credits of advanced ecosystem components selected from:

|          |     |                            |
|----------|-----|----------------------------|
| BIOL 553 | (3) | Neotropical Environments   |
| GEOG 372 | (3) | Running Water Environments |

|          |     |                                 |
|----------|-----|---------------------------------|
| PLNT 358 | (3) | Flowering Plant Diversity       |
| SOIL 326 | (3) | Soils in a Changing Environment |
| WILD 307 | (3) | Natural History of Vertebrates  |

**Advanced Ecological Processes:**

6 credits of advanced ecological processes selected from:

\* Note: You may take BIOL 432 or ENVB 315, but not both; you can take BREE 217 or GEOG 322, but not both.

|           |     |                               |
|-----------|-----|-------------------------------|
| BIOL 432* | (3) | Limnology                     |
| BIOL 465  | (3) | Conservation Biology          |
| BREE 217* | (3) | Hydrology and Water Resources |
| ENVB 315* | (3) | Science of Inland Waters      |
| ENVB 410  | (3) | Ecosystem Ecology             |
| GEOG 322* | (3) | Environmental Hydrology       |
| MICR 331  | (3) | Microbial Ecology             |
| NRSC 333  | (3) | Pollution and Bioremediation  |
| PLNT 460  | (3) | Plant Ecology                 |

**Social Processes:**

6 credits of social processes selected as follows:

\* If WILD 415 is taken, 1 additional credit of complementary courses must be taken.

\*\* Note: You may take AGECE 333 and ECON 405, but not both.

|             |     |                                      |
|-------------|-----|--------------------------------------|
| AGECE 242   | (3) | Management Theories and Practices    |
| AGECE 333** | (3) | Resource Economics                   |
| ANTH 339    | (3) | Ecological Anthropology              |
| CANS 407    | (3) | Regions of Canada                    |
| ECON 405**  | (3) | Natural Resource Economics           |
| GEOG 382    | (3) | Principles Earth Citizenship         |
| GEOG 498    | (3) | Humans in Tropical Environments      |
| RELG 270    | (3) | Religious Ethics and the Environment |
| SOCI 565    | (3) | Social Change in Panama              |
| URBP 520    | (3) | Globalization: Planning and Change   |
| WILD 415*   | (2) | Conservation Law                     |

**Ecosystem Components or Management of Ecosystems:**

9 credits of ecosystem components or management of ecosystems selected from:

|          |     |                                   |
|----------|-----|-----------------------------------|
| AGRI 435 | (3) | Soil and Water Quality Management |
| AGRI 452 | (3) | Water Resources in Barbados       |
| AGRI 550 | (3) | Sustained Tropical Agriculture    |
| ENVB 437 | (3) | Assessing Environmental Impact    |
| GEOG 302 | (3) | Environmental Management 1        |
| GEOG 404 | (3) | Environmental Management 2        |
| PLNT 300 | (3) | Cropping Systems                  |

|          |     |                                   |
|----------|-----|-----------------------------------|
| SOIL 335 | (3) | Soil Ecology and Management       |
| WILD 401 | (4) | Fisheries and Wildlife Management |
| WOOD 441 | (3) | Integrated Forest Management      |

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## 10.7 Water Environments and Ecosystems Domain

This domain is open only to students in the B.Sc.(Ag.Env.Sc.) Major Environment or B.Sc. Major Environment programs.

### Water Environments and Ecosystems – Biological

| Adviser  | Mentor  |
|--|---|
| Ms. Kathy Roulet<br>Telephone: 514-398-4306<br>Email: <a href="mailto:kathy.r">kathy.r</a> | Professor Brian Leung<br>Telephone: 514-398-6460<br>Email: <a href="mailto:brian.leung2@mcgill.ca">brian.leung2@mcgill.ca</a> |

|          |     |                                   |
|----------|-----|-----------------------------------|
| ENVR 202 | (3) | The Evolving Earth                |
| ENVR 203 | (3) | Knowledge, Ethics and Environment |
| ENVR 301 | (3) | Environmental Research Design     |
| ENVR 400 | (3) | Environmental Thought             |

**Core: Complementary Course - Senior Research Project (3 credits)**

Only 3 credits will be applied to the program; extra credits will count as electives.

|          |     |                               |
|----------|-----|-------------------------------|
| AGRI 519 | (6) | Sustainable Development Plans |
| ENVR 401 | (3) | Environmental Research        |
| ENVR 451 | (6) | Research in Panama            |

**Domain: Required Courses (6 credits)**

|          |     |   |
|----------|-----|---|
| ATOC 214 | (3) | Introduction: Physics of the Atmosphere |
| ATOC 215 | (3) | Oceans, Weather and Climate             |

**Domain: Complementary Courses (33 credits)**

33 credits of complementary courses are selected as follows:

6 credits - Hydrology/Water Resources, Population/Community and Ecology

3 credits - Math and Statistics

3 credits - Field Course

3 credits - Social Sciences and Policy

18 credits chosen in total from List A and List B

**Hydrology/Water Resources, Population/Community and Ecology:**

6 credits selected as follows:

One of:

|          |     |                               |
|----------|-----|-------------------------------|
| BREE 217 | (3) | Hydrology and Water Resources |
| GEOG 322 | (3) | Environmental Hydrology       |

And one of:

|          |     |                                |
|----------|-----|--------------------------------|
| BIOL 308 | (3) | Ecological Dynamics            |
| ENVB 305 | (3) | Population & Community Ecology |

**Math and Statistics:**

One of:

\* Note: AEMA 310 or equivalent

|           |     |                            |
|-----------|-----|----------------------------|
| AEMA 202  | (3) | Intermediate Calculus      |
| AEMA 310* | (3) | Statistical Methods 1      |
| MATH 203  | (3) | Principles of Statistics 1 |
| MATH 222  | (3) | Calculus 3                 |

**Field Course:**





6-9 credits chosen from:

\* Note: you may take ATOC 219 or CHEM 219, but not both; you may take ATOC 419 or CHEM 419, but not both; you may take ENVB 430 or GEOG 201, but not both; CHEM 287 and CHEM 297 must be taken together.

|           |     |  |
|-----------|-----|--|
| ATOC 219* | (3) | Introduction to Atmospheric Chemistry        |
| ATOC 419* | (3) | Advances in Chemistry of Atmosphere          |
| CHEM 219* | (3) | Introduction to Atmospheric Chemistry        |
| CHEM 287* | (2) | Introductory Analytical Chemistry            |
| CHEM 297* | (1) | Introductory Analytical Chemistry Laboratory |
| CHEM 419* | (3) | Advances in Chemistry of Atmosphere          |
| ENVB 430* | (3) | GIS for Natural Resource Management          |
| EPSC 220  | (3) | Principles of Geochemistry                   |
| GEOG 201* | (3) | Introductory Geo-Information Science         |
| GEOG 308  | (3) | Principles of Remote Sensing                 |
| GEOG 372  | (3) | Running Water Environments                   |
| GEOG 537  | (3) | Advanced Fluvial Geomorphology               |
| GEOG 550  | (3) | Historical Ecology Techniques                |

#### **10.7.2 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) or Bachelor of Science (B.Sc.) - Major Environment - Water Environments and Ecosystems - Physical (63 credits)**

This concentration (60 credits including core) is open only to students in the B.Sc.(Ag.Env.Sc.) Major in Environment or B.Sc. Major in Environment program.

To educate students in both the ecological and physical facets of the water environment, this domain offers two concentrations, with students choosing one or the other.

Students interested in studying the transport and transformation mechanisms of water on the planet, from rivers to the oceans and atmosphere, will select the Physical concentration. They will acquire, as well, a solid background in the biological processes taking place in water bodies. Those electing the Biological concentration will focus on the mechanisms regulating the different forms of life in water bodies. They will acquire, as well, a good understanding of the physical mechanisms controlling water properties.

Graduates of this domain are qualified to enter the work0 0 j-0.elect

ENVR 400 (3) Environmental Thought

**Core: Complementary Course - Senior Research Project (3 credits)**

Note: Only 3 credits will be applied to the program; extra credits will count as electives.

AGRI 519 (6) Sustainable Development Plans  
ENVR 401 (3) Environmental Research  
ENVR 451 (6) Research in Panama

**Domain: Required Courses (12 credits)**

ATOC 214 (3) Introduction: Physics of the Atmosphere  
ATOC 215 (3) Oceans, Weather and Climate  
ATOC 315 (3) Thermodynamics and Convection  
GEOG 372 (3) Running Water Environments

**Domain: Complementary Courses (30 credits)**

30 credits of complementary courses are selected as follows:

6 credits - Hydrology/W

**Field Course:**

3 credits selected from the following courses or an equivalent Aquatic Field course:

|          |     |                                    |
|----------|-----|------------------------------------|
| AGRI 452 | (3) | Water Resources in Barbados        |
| GEOG 495 | (3) | Field Studies - Physical Geography |

**List A:**

12 credits chosen from:

|          |     |                                      |
|----------|-----|--------------------------------------|
| AGRI 435 | (3) | Soil and Water Quality Management    |
| ATOC 309 | (3) | Weather Radars and Satellites        |
| ATOC 568 | (3) | Ocean Physics                        |
| BREE 416 | (3) | Engineering for Land Development     |
| CIVE 323 | (3) | Hydrology and Water Resources        |
| EPSC 549 | (3) | Hydrogeology                         |
| GEOG 201 | (3) | Introductory Geo-Information Science |
| GEOG 308 | (3) | Principles of Remote Sensing         |
| GEOG 537 | (3) | Advanced Fluvial Geomorphology       |
| NRSC 510 | (3) | Agricultural Micrometeorology        |
| URBP 520 | (3) | Globalization: Planning and Change   |

And/or one of:

|          |     |                                 |
|----------|-----|---------------------------------|
| AEMA 305 | (3) | Differential Equations          |
| MATH 315 | (3) | Ordinary Differential Equations |

And/or one of:

|          |     |                                  |
|----------|-----|----------------------------------|
| BREE 506 | (3) | Advances in Drainage Management  |
| BREE 509 | (3) | Hydrologic Systems and Modelling |

And/or one of:

|          |     |                             |
|----------|-----|-----------------------------|
| ENVB 210 | (3) | The Biophysical Environment |
| GEOG 305 | (3) | Soils and Environment       |

And/or one of:

|          |     |                                     |
|----------|-----|-------------------------------------|
| ENVB 430 | (3) | GIS for Natural Resource Management |
| GEOG 306 | (3) | Raster Geo-Information Science      |

**List B:**

6 credits chosen from:

\* Note: You can take BIOL 432 or ENVB 315, but not both.

|           |     |                |
|-----------|-----|----------------|
| BIOL 342  | (3) | Marine Biology |
| BIOL 432* | (3) | Limnology      |

|           |     |                                   |
|-----------|-----|-----------------------------------|
| BIOL 441  | (3) | Biological Oceanography           |
| BIOL 465  | (3) | Conservation Biology              |
| BIOL 553  | (3) | Neotropical Environments          |
| ENVB 315* | (3) | Science of Inland Waters          |
| GEOG 350  | (3) | Ecological Biogeography           |
| GEOG 505  | (3) | Global Biogeochemistry            |
| WILD 401  | (4) | Fisheries and Wildlife Management |

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## 11 Major in Environment – B.Sc.

In addition to the domains available to students in the Major program in either the Faculty of Science or the Faculty of Agricultural and Environmental Sciences, “Major in Environment - B.Sc.” students in the Faculty of Science can choose from one of the following two domains:

- Atmospheric Environment and Air Quality, or
- Earth Sciences and Economics.

Refer to

## The Global Environn

(3)

Statistical Methods 1



3 credits - Statistics courses

9 credits - List A

12 credits - List B

**Statistics:**

One of the following Statistics courses or equivalent.

Note: Credit given for Statistics courses is subject to certain restrictions. Students in Science should consult the "Course Overlap" information in the "Course Requirements" section for the Faculty of Science.

|          |     |                                 |
|----------|-----|---------------------------------|
| AEMA 310 | (3) | Statistical Methods 1           |
| GEOG 202 | (3) | Statistics and Spatial Analysis |



|          |     |                              |
|----------|-----|------------------------------|
| GEOG 322 | (3) | Environmental Hydrology      |
| SOIL 510 | (3) | Environmental Soil Chemistry |

## 12 Honours Program in Environment

### Adviser

Ms. Kathy Roulet, MSE Program Adviser  
 Telephone: 514-398-4306  
 Email: [kathy.roulet@mcgill.ca](mailto:kathy.roulet@mcgill.ca)

This Program is open only to students in the B.Sc. Major in Environment, B.Sc.(Ag.Env.Sc.) Major in Environment, B.A. Faculty Program in Environment, and the B.A. & Sc. Interfaculty Program in Environment.

The Honours Program in Environment offers students the opportunity to undertake a year-long research project in close association with a professor. Honours research provides excellent preparation for graduate studies, but is not required for such studies. The Honours in Environment **adds 6 credits of research to the regular Environment program**. Since the Honours research is carried out in the final year at the same time as the regular courses, it does not add to the length (duration) of the degree. Students simply have 6 fewer credits of electives. If, for some reason, students cannot complete the Honours requirements, they may still graduate with the regular Environment program.

### 12.1 Bachelor of Arts (B.A.) - Honours Environment (60 credits)

This program is open only to students in the B.A. Faculty Program Environment. To be eligible for Honours, students must satisfy the requirements set by their B.A. degree.

In addition, students must satisfy the following:

1. Students apply for the Honours program in March of their U2 year. See the Program Adviser for details.
2. Applicants must have a minimum Program GPA (GPA of all required and complementary courses for the program in Environment taken at McGill) of 3.3 to enter the Honours program.
3. Students must earn a B grade (3.0) or higher for the Honours Research course (ENVR 495).
4. Students are required to achieve a minimum overall CGPA of 3.0 at graduation, and a minimum Program GPA of 3.3 to obtain Honours.
5. Arts (B.A.) students in the Honours Environment program must also complete a minor concentration in an academic unit other than the McGill School of Environment. Please refer to the Faculty of Arts regulations on Honours programs found under "Faculty Degree Requirements", "About Program Requirements" and "Departmental Programs".

Students in the B.A. Honours programs complete the core and domain courses (54 credits) according to their chosen domain as well as the 6 credits of Honours required courses.

At the completion of your Honours research, you are expected to present your results at an Honours Symposium, and are required to submit a copy of your final report to the MSE Program Adviser.

#### Honours Required Courses (6 credits)

Note: you take either ENVR 495D1 and ENVR 495D2 (6 credits over consecutive terms) or ENVR 495N1 and ENVR 495N2 (6 credits over non-consecutive terms).

|            |     |                  |
|------------|-----|------------------|
| ENVR 495D1 | (3) | Honours Research |
| ENVR 495D2 | (3) | Honours Research |
| ENVR 495N1 | (3) | Honours Research |
| ENVR 495N2 | (3) | Honours Research |

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## **12.2 Bachelor of Science (B.Sc.) - Honours Environment (72 credits)**

This program is open only to students in the B.Sc. Major Environment. To be eligible for Honours, students must satisfy the requirements set by their B.Sc. degree.

In addition, students must satisfy the following:

1. Students apply for the Honours program in March of their U2 year. See the Program Adviser for details.
2. Appl 7Re.

## 12.4 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) - Honours Environment (69 credits)

This program is open only to students in the B.Sc.(Ag.Env.Sc.) Major Environment. To be eligible for Honours, students must satisfy the requirements set by their B.Sc.(Ag.Env.Sc.) degree.

In addition, students must satisfy the following:

1. Students apply for the Honours program in March of their U2 year. See the Program Adviser for details.
2. Applicants must have a minimum Program GPA (GPA of all required and complementary courses for the program in Environment taken at McGill) of 3.3 to enter the Honours program.
3. Students must earn a B grade (3.0) or higher for the Honours Research courses (ENVR 496 and ENVR 497).
4. Students are required to achieve a minimum overall CGPA of 3.0 at graduation, and a minimum Program GPA of 3.3 to obtain Honours.

Students in the B.Sc.(Ag.Env.Sc.) Honours program complete the core and domain courses (60 to 63 credits) according to their chosen domain as well as the 6 credits of required Honours courses.

At the completion of your Honours research, you are expected to present your results at an Honours Symposium, and are required to submit a copy of your final report to the MSE Program Adviser.

### Honours - Required Courses (6 credits)

|          |     |                         |
|----------|-----|-------------------------|
| ENVR 496 | (3) | Honours Research Part 1 |
| ENVR 497 | (3) | Honours Research Part 2 |

## 13 Joint Honours Component Environment

### Adviser

Ms. Kathy Roulet, MSE Program Adviser  
 Telephone: 514-398-4306  
 Email: [kathy.roulet@mcgill.ca](mailto:kathy.roulet@mcgill.ca)

This program is open only to students in the B.A. Faculty Program in Environment.

The Joint Honours Component Environment offers students the opportunity to undertake a year-long, interdisciplinary research project in their final year in close association with a professor. Honours research provides excellent preparation for graduate studies, but is not required for such studies. If, for some reason, students cannot complete the Joint Honours requirements, they may still graduate with a Minor Concentration Environment.

### 13.1 Bachelor of Arts (B.A.) - Joint Honours Component Environment (36 credits)

Students wishing to study at the honours level in two disciplines can combine joint honours program components in any two Arts disciplines. For a list of available joint honours programs, see "Overview of Programs Offered" and "Joint Honours Programs".

Joint Honours students should consult an adviser in each department for approval of their course selection and their interdisciplinary honours research project.

Students will enter the Joint Honours at the end of their U1 year, and will be required to maintain a PGPA of 3.30 and an overall CGPA of 3.0. Whereas the Faculty Program Environment Honours requires the student to undertake a Minor as well, the Joint Honours Environment component does not.

This program comprises 36 credits, including: Honours research (6 credits); Environment core (21 credits); statistics (3 credits); and complementary courses (6 credits).

#### Program Prerequisites or Corequisites

The program corequisites (6-8 credits), which are common to the stand-alone Environment Honours program, are in addition to the overall credit account. Students are required to complete these courses by the end of their U1 year.

3 credits of Basic Science, one of the following, or their equivalents (e.g., CEGEP objectives Biology 00UK, Chemistry 00UL, Physics 00UR):

|          |     |                                |
|----------|-----|--------------------------------|
| BIOL 111 | (3) | Principles: Organismal Biology |
|----------|-----|--------------------------------|

|          |     |                                  |
|----------|-----|----------------------------------|
| CHEM 110 | (4) | General Chemistry 1              |
| PHYS 101 | (4) | Introductory Physics - Mechanics |

And one of the following:

3 credits of Calculus or equivalent (e.g., CEGEP objective 00UN):

|          |     |                             |
|----------|-----|-----------------------------|
| MATH 139 | (4) | Calculus 1 with Precalculus |
| MATH 140 | (3) | Calculus 1                  |

### Required Courses (27 credits)

21 credits of Environment core courses as follows:

|          |     |   |
|----------|-----|---|
| ENVR 200 | (3) | The Global Environment                  |
| ENVR 201 | (3) | Society, Environment and Sustainability |
| ENVR 202 | (3) | The Evolving Earth                      |
| ENVR 203 | (3) | Knowledge, Ethics and Environment       |
| ENVR 301 | (3) | Environmental Research Design           |
| ENVR 400 | (3) | Environmental Thought                   |
| ENVR 401 | (3) | Environmental Research                  |

And 6 credits of honours research from the following:

Note: you take either ENVR 495D1 and ENVR 495D2 (6 credits over consecutive terms) or ENVR 495N1 and ENVR 495N2 (6 credits over non-consecutive terms).

|            |     |                  |
|------------|-----|------------------|
| ENVR 495D1 | (3) | Honours Research |
| ENVR 495D2 | (3) | Honours Research |
| ENVR 495N1 | (3) | Honours Research |
| ENVR 495N2 | (3) | Honours Research |

### Complementary Courses (9 credits)

One of the following Statistics courses or equivalent:

|          |     |  |
|----------|-----|--|
| BIOL 373 | (3) | Biometry                                 |
| GEOG 202 | (3) | Statistics and Spatial Analysis          |
| MATH 203 | (3) | Principles of Statistics 1               |
| PSYC 204 | (3) | Introduction to Psychological Statistics |

And 6 credits chosen with approval of the Program Adviser, at least 3 credits of which must be at the 400 level or higher.

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## 14 Diploma in Environment

### Adviser

Ms. Kathy Roulet, MSE Program Adviser  
 Telephone: 514-398-4306  
 Email: [kathy.roulet@mcgill.ca](mailto:kathy.roulet@mcgill.ca)

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**14.1 Diploma in Environment (30 credits)**

The Diploma in En

|          |     |   |
|----------|-----|---|
| ANTH 206 | (3) | Environment and Culture                                 |
| ANTH 212 | (3) | Anthropology of Development                             |
| ANTH 339 | (3) | Ecological Anthropology                                 |
| ANTH 512 | (3) | Political Ecology                                       |
| BREE 503 | (3) | Water: Society, Law and Policy                          |
| CIVE 433 | (3) | Urban Planning  |
| ECON 205 | (3) | An Introduction to Political Economy                    |
| ECON 225 | (3) | Economics of the Environment                            |
| ECON 326 | (3) | Ecological Economics                                    |
| ECON 347 | (3) | Economics of Climate Change                             |
| ECON 405 | (3) | Natural Resource Economics                              |
| ENVB 437 | (3) | Assessing Environmental Impact                          |
| ENVR 201 | (3) | Society, Environment and Sustainability                 |
| ENVR 203 | (3) | Knowledge, Ethics and Environment                       |
| ENVR 400 | (3) | Environmental Thought                                   |
| GEOG 200 | (3) | Geographical Perspectives: World Environmental Problems |
| GEOG 210 | (3) | Global Places and Peoples                               |
| GEOG 216 | (3) | Geography of the World Economy                          |
| GEOG 221 | (3) | Environment and Health                                  |

|           |     |                                      |
|-----------|-----|--------------------------------------|
| PSYC 215  | (3) | Social Psychology                    |
| RELG 270  | (3) | Religious Ethics and the Environment |
| RELG 340  | (3) | Religion and the Sciences            |
| RELG 370  | (3) | Religion and Human Rights            |
| RELG 376  | (3) | Religious Ethics                     |
| SOCI 222  | (3) | Urban Sociology                      |
| SOCI 234  | (3) | Population and Society               |
| SOCI 235  | (3) | Technology and Society               |
| SOCI 254  | (3) | Development and Underdevelopment     |
| SOCI 386  | (3) | Contemporary Social Movements        |
| URBP 201  | (3) | Planning the 21st Century City       |
| URBP 506  | (3) | Environmental Policy and Planning    |
| URBP 530  | (3) | Urban Environmental Planning         |
| WILD 415* | (2) | Conservation Law                     |

### Natural Sciences and Technology

\* Note: You may take LSCI 230 or MIMM 211, but not both; you may take BIOL 432 or ENVB 315, but not both; you may take ENVB 430 or GEOG 201, but not both; you may take BREE 217 or GEOG 322, but not both.

|           |     |                                      |
|-----------|-----|--------------------------------------|
| AGRI 340  | (3) | Principles of Ecological Agriculture |
| AGRI 435  | (3) | Soil and Water Quality Management    |
| ANSC 326  | (3) | Fundamentals of Population Genetics  |
| ANTH 311  | (3) | Primate Behaviour and Ecology        |
| ARCH 375  | (2) | Landscape                            |
| ARCH 377  | (3) | Energy, Environment and Buildings    |
| ARCH 378  | (3) | Site Usage                           |
| ATOC 215  | (3) | Oceans, Weather and Climate          |
| BIOL 240  | (3) | Monteregian Flora                    |
| BIOL 305  | (3) | Animal Diversity                     |
| BIOL 308  | (3) | Ecological Dynamics                  |
| BIOL 310  | (3) | Biodiversity and Ecosystems          |
| BIOL 342  | (3) | Marine Biology                       |
| BIOL 418  | (3) | Freshwater Invertebrate Ecology      |
| BIOL 432* | (3) | Limnology                            |
| BIOL 436  | (3) | Evolution and Society                |
| BIOL 465  | (3) | Conservation Biology                 |
| BREE 217* | (3) | Hydrology and Water Resources        |
| BREE 322  | (3) | Organic Waste Management             |
| BREE 518  | (3) | Bio-Treatment of Wastes              |
| BTEC 502  | (3) | Biotechnology Ethics and Society     |
| CHEE 230  | (3) | Environmental Aspects of Technology  |
| CHEM 212  | (4) | Introductory Organic Chemistry 1     |
| CHEM 281  | (3) | Inorganic Chemistry 1                |
| CHEM 462  | (3) | Green Chemistry                      |

|           |     |   |
|-----------|-----|---|
| CIVE 225  | (4) | Environmental Engineering                               |
| CIVE 323  | (3) | Hydrology and Water Resources                           |
| CIVE 550  | (3) | Water Resources Management                              |
| ENTO 340  | (3) | Field Entomology  |
| ENVB 210  | (3) | The Biophysical Environment                             |
| ENVB 301  | (3) | Meteorology   |
| ENVB 305  | (3) | Population & Community Ecology                          |
| ENVB 315* | (3) | Science of Inland Waters                                |
| ENVB 410  | (3) | Ecosystem Ecology                                       |
| ENVB 415  | (3) | Ecosystem Management                                    |
| ENVB 430* | (3) | GIS for Natural Resource Management                     |
| ENVR 200  | (3) | The Global Environment                                  |
| ENVR 202  | (3) | The Evolving Earth                                      |
| EPSC 201  | (3) | Understanding Planet Earth                              |
| EPSC 233  | (3) | Earth and Life History                                  |
| EPSC 425  | (3) | Sediments to Sequences                                  |
| EPSC 549  | (3) | Hydrogeology  |
| ESYS 301  | (3) | Earth System Modelling                                  |
| GEOG 200  | (3) | Geographical Perspectives: World Environmental Problems |
| GEOG 201* | (3) | Introductory Geo-Information Science                    |
| GEOG 205  | (3) | Global Change: Past, Present and Future                 |
| GEOG 272  | (3) | Earth's Changing Surface                                |
| GEOG 308  | (3) | Principles of Remote Sensing<br>Climatic Environmentg   |



|          |     |                           |
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| PLNT 358 | (3) | Flowering Plant Diversity |
| PLNT 426 | (3) | Plant Ecophysiology       |
| PLNT 460 | (3) | Plant Ecology             |
| SOIL 300 | (3) | Geosystems                |
| WILD 421 | (3) | Wildlife Conservation     |

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## 15 Field Studies

Field study semesters are available in Africa, Barbados, and Panama. For details, see *Programs, Courses and University Regulations > Faculties & Schools > Field Studies > Undergraduate > : [Field Study Semesters and Off-Campus Courses](#)*.

