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## 1 The School

### 1.1 Location

For advising, contact:

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 Fax: (514) 398-1643  
 Email: [info.mse@mcgill.ca](mailto:info.mse@mcgill.ca)

Website: <http://www.mcgill.ca/mse>

Downtown Campus

3534 University Street  
 Montreal, QC H3A 2A7  
 Telephone: (514) 398-2827  
 Fax: (514) 398-1643

Macdonald Campus

Rowles House  
 21,111 Lakeshore Road  
 Sainte-Anne-de-Bellevue, QC H9X 3V9  
 Telephone: (514) 398-7559  
 Fax: (514) 398-7846

### 1.2 Administrative Officers

DEBORAH BUSZARD, B.Sc.(Bath), Ph.D.(Lond.) **Dean,  
 Faculty of Agricultural and Environmental Sciences**

CARMAN MILLER, B.A., B.Ed.(Acad.), M.A.(Dal.),  
 Ph.D.(Lond.) **Dean, Faculty of Arts**

ALAN G. SHAVER, B.Sc.(Car.), Ph.D.(M.I.T.)  
**Dean, Faculty of Science**

TBA **Director**

MARILYN SCOTT, B.Sc. (U.N.B.), Ph.D.(McG.)  
**Associate Director**

PETER BARRY, B.Sc.(C'dia), M.Sc.(McG.)  
**Program Coordinator**

### 1.3 Academic Staff

*Professor*

Peter G. Brown; B.A.(Haverford), M.A., Ph.D.(Columbia)  
*(joint appt. with Geography and Natural Resource  
 Sciences)*

*Associate Professor*

Marilyn Scott; B.Sc.(U.N.B.), Ph.D.(McG.) *(joint appt. with  
 Institute of Parasitology)*

*Assistant Professors*

Madhav Badami; B.Tech., M.Sc.(I.I.T.), M.E.Des.(Calg.),  
 Ph.D.(Br.Col.) *(joint appt. with School of Urban Planning)*  
 Sylvie de Blois; B.Sc.(Agr.)(McG.), M.Sc., Ph.D.(Montr.) *(joint  
 appt. with Plant Science)*

Colin Duncan; B.A.(Queen's), M.A., Ph.D.(York) *(joint appt.  
 with History)*

Jaye Ellis; B.A.(Calg.), LL.B., B.C.L.(McG.), LL.M.(U.B.C.)  
*(joint appt. with Law)*

Frédéric Fabry; B.Sc., M.Sc., Ph.D.(McG.) *(joint appt. with  
 Atmospheric and Oceanic Sciences)*

Gregory Mikkelson; 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)*

Renée Sieber; B.Sc.(Mich. St.), M.P.A.(W. Mich.),  
 Ph.D.(Rutgers) *(joint appt. with Geography)*

Joann Whalen; B.Sc.Agr.(Dal.), M.Sc.(McG.),  
 Ph.D.(Ohio St.) *(joint appt. with Natural Resource  
 Sciences)*

### 1.4 Creation of the School

McGill's Faculties of Agricultural and Environmental Sciences, Arts, and Science 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.

## 1.5 Goals of the School

The McGill School of Environment has the following goals:

- to impart to students an understanding of current environmental problems;
- to provide an exciting and rigorous program that allows for intellectual growth in the comprehension of environmental issues or components of the environment;
- to help students gain an understanding of the complexity and conflicts that underlie most environmental problems; and
- to give students an opportunity to apply their knowledge in the analysis of specific, contemporary problems.

## 2 Admission, Registration and Regulations

### 2.1 Admission

Students may be admitted to B.A. or B.Sc. programs, offered by the MSE on the University's two campuses: the Macdonald Campus and the Downtown Campus. They register as students within their Faculty of admission and are governed by all rules and regulations of that Faculty.

Students who have already completed a Bachelor or an equivalent degree may be admitted to the Diploma in Environment through any of the three MSE Faculties: Agricultural and Environmental Sciences, Arts, and Science. They register as students within their Faculty of admission and are governed by all rules and regulations of that Faculty relative to the Diploma.

Please refer to "[Admission Requirements](#)" on page 13.

### 2.2 Degree Requirements

To be eligible for a B.A. degree, students must fulfill all the Faculty and program requirements as indicated in Faculty of Arts [section 3](#).

To be eligible for a B.Sc. degree, students must fulfill all the Faculty and program requirements as indicated in Faculty of Science [section 3](#).

To be eligible for a Diploma in Environment, students must fulfill all program requirements as specified in [section 7](#).

### 2.3 Important Information about Program Selection

The MSE uses students' program selections to identify which students are in the School's major programs (and, by extension, which students are in the McGill Environmental Students' Society).

Students in U1 who are unsure of the Domain they want to pursue may use the "Environment - no Domain" program selection when registering on-line.

**Note:** Students must select a Domain in order to graduate, they cannot graduate with the "Environment - no Domain" program selection.

None of the above applies to students in the Minor or Diploma Programs.

### 2.4 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 (replacing the 170- code previously used). See the table on [page 32](#) of this Calendar for a key to other unit Subject Codes.

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. Senior undergraduate students can also take some 500-level courses, but they should limit themselves to no more than one per semester.

## 2.5 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. Students 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, of Engineering, or of Management**.

### 2.6 Courses outside Arts and Science

Students in the School's B.A. and B.Sc. programs may take courses outside the Faculties of Arts and of Science according to the regulations of their Faculty of admission: Arts students, see Faculty of Arts [section 3.6.2](#); Science students, see Faculty of Science [section 3.6.3](#).

Science students in particular should be aware that some courses are restricted and cannot be taken for credit. See the Science Student Affairs website at <http://www.mcgill.ca/artscisao>. Check under Course Information, Course Restrictions.

Students in the Diploma in Environment follow the program as as specified in [section 7](#).

## 3 Programs Offered

The McGill School of Environment has developed four programs which are offered on the Downtown and Macdonald campuses. These programs strive to offer the flexibility necessary to deal with the environment through a set of core courses that provide the general knowledge base of the program combined with a progressive series of courses in a trans-disciplinary area of environmental specialization, referred to as a Domain.

The programs are designed to prepare students for further study in environment or discipline-based graduate programs, and for employment in industry, government, and education.

The MSE offers four options for students interested in pursuing environmental studies.

1. **A Minor in Environment** is open to all undergraduate students.
2. **A Faculty Program in Environment** leading to a B.A. is open to Arts students only.
3. **A Major in Environment** leading to a B.Sc. is open to students meeting the entrance requirements of the Faculty of Science and who obtain the necessary number of credits in approved Science, or Agricultural and Environmental Sciences, courses.
4. **A Diploma in Environment** is available only to students who have already completed a Bachelor or an equivalent degree, and who wish to return to university for further undergraduate study. The Diploma is offered by all three MSE Faculties: Agricultural and Environmental Sciences, Arts, and Science.

## 4 Minor in Environment

The Minor in Environment is intended to complement an expertise obtained through a Major, Major Concentration or a Faculty Program offered by an academic unit **other than** the MSE. Students taking the Minor in Environment are exposed to different approaches, perspectives, and world views that will help them gain an understanding of the complexity and conflicts that underlie environmental problems.

Students, after consulting with their adviser in their major program or concentration and the MSE Program Coordinator, can declare their intention to do a Minor in Environment.

To obtain a Minor in Environment, students must:

- (a) register for the Minor;
- (b) submit their program of courses already taken and to be taken for the Minor in Environment to the MSE Program Coordinator for approval;
- (c) pass all courses counted towards the Minor with **a grade of C or higher**;
- (d) complete 18 credits from the courses listed below not otherwise counted towards the student's Major program or concentration or a second Minor program; and
- (e) ensure that all the credits specified in (c) above are taken outside the discipline or field of the student's Major program or concentration.

#### 4.1 Minor Concentration in Environment

This 18-credit Minor is intended for Arts students in the multi-track system.

Adviser: Mr. Pete Barry, MSE Program Coordinator  
 email: [info.mse@mcgill.ca](mailto:info.mse@mcgill.ca)  
 telephone: (514) 398-4306

##### Complementary Courses (18 credits)

12 credits selected from the MSE core courses:

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

6 credits selected from Thematic Categories, at least 3 credits must be from the list of courses in the thematic area of Natural Sciences and Technology.

See "[List of approved Thematic Category Courses for the Minor and the Diploma](#)" on page 506. Course descriptions and prerequisites can be found in the unit's Calendar entry. The most up-to-date information on courses being offered this academic year is provided in the Class Schedule, available on the Web at <http://www.mcgill.ca/minerva-students>.

#### 4.2 Minor Program in Environment

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

Adviser: Mr. Pete Barry, MSE Program Coordinator  
 email: [info.mse@mcgill.ca](mailto:info.mse@mcgill.ca)  
 telephone: (514) 398-4306

##### Complementary Courses (18 credits)

12 credits selected from the MSE core courses:

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

6 credits selected from Thematic Categories, at least 3 credits must be from the list of courses in the thematic area of Social Sciences and Policy.

See "[List of approved Thematic Category Courses for the Minor and the Diploma](#)" on page 506. Course descriptions and prerequisites can be found in the unit's Calendar entry. The most up-to-date information on courses being offered this academic year is provided in the Class Schedule, available on the Web at <http://www.mcgill.ca/minerva-students>.

## 5 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. **Introductory Core:** The Core consists of four introductory courses 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 component of the environment. Additional Domains are being developed in several areas. More information on these is available on the MSE website <http://www.mcgill.ca/mse>.
3. **Final Core:** 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 B.A. Faculty Program in Environment students must:

- (a) register in a Domain;
- (b) pass all courses counted towards the Faculty Program with **a grade of C or higher**;
- (c) 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
- (d) fulfill all Faculty requirements as specified for the B.A. in the Faculty of Arts [section 3](#) which includes meeting the minimum credit requirement as specified in their letter of admission.

#### B.A. FACULTY PROGRAM IN ENVIRONMENT (54 credits)

The B.A. Faculty Program requires, as either a pre- or co-requisite for the Core courses:

3 credits of calculus

- MATH 139 Calculus  
or MATH 140 Calculus 1  
or equivalent (e.g., CEGEP objective 00UN)

3 credits of basic science chosen from:

- BIOL 111 Principles of Organismal Biology  
or CHEM 110 General Chemistry - Biological  
or PHYS 101 Introductory Physics - Mechanics  
or their equivalents (e.g., CEGEP objectives: Biology 00UK,  
Chemistry 00UL, Physics 00UR).

##### Core – Required Courses (18 credits)

The Core courses are listed below in the Domain descriptions.

##### Domain (36 credits)

one MSE Domain selected from those available to students in the B.A. Faculty program.

Currently available:

- Ecological Determinants of Health in Society (36 credits)
- Economics and the Earth's Environment (36 credits)
- Environment and Development (36 credits)

Additional Domains TBA – refer to the MSE website.

Each Domain has different requirements which are listed below. Course descriptions and prerequisites can be found in the unit's Calendar entry. The most up-to-date information on courses being offered this academic year is provided in the Class Schedule, available on the Web at <http://www.mcgill.ca/minerva-students>.

### 5.1 Ecological Determinants of Health in Society Domain

This Domain (54 credits including Core) is open only to students in the B.A. Faculty Program in Environment.

Adviser: Mr. Pete Barry, MSE Program Coordinator  
 email: info.mse@mcgill.ca  
 telephone: (514) 398-4306

An understanding of the interface between human health and environment depends not only on an appreciation of the biological and ecological determinants of health, but equally on an appreciation of the role of social sciences in the design, implementation, and monitoring of interventions. Demographic patterns and urbanization, economic forces, ethics, indigenous knowledge and culture, and an understanding of how social change can be effected are all critical if we are to be successful in our efforts to assure health of individuals and societies in the future. Recognizing the key role that nutritional status plays in maintaining a healthy body, and the increasing importance of infection as a health risk linked intimately with the environment, this domain prepares students to contribute to the solution of problems of nutrition and infection by tying the relevant natural sciences to the social sciences.

Course descriptions and prerequisites can be found in the unit's Calendar entry. The most up-to-date information on courses being offered this academic year is provided in the Class Schedule, available on the Web at <http://www.mcgill.ca/minerva-students>.

**Courses offered at Macdonald Campus are marked with an (M). (Introductory Core Courses are offered on both campuses.)**

**Prerequisite or Corequisite Course for Domain** (3 credits)

- BIOL 111 (3) Principles of Organismal Biology
- or AEBI 120 (3) General Biology (M)
- or equivalent (e.g., CEGEP objective 00UK or equivalent)

This course can also satisfy 3 credits of the pre/co-requisites for the B.A. Faculty Program in Environment listed above.

**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 Domain prerequisites or co-requisites listed above.**

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

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

\* Students taking ENVR 401 in Sept. 2002 must contact the Program Coordinator prior to registering, email: info.mse@mcgill.ca

**Required Course for Domain** (3 credits)

- PARA 410 (3) Environment and Infection (M)

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

15 credits chosen from List A:

- ANTH 227 (3) Medical Anthropology
- or WILD 333 (3) Physical and Biological Aspects of Pollution(M)
- ECON 208 (3) Microeconomic Analysis and Applications
- or AGECE 200 (3) Principles of Microeconomics (M)
- MATH 203 (3) Principles of Statistics 1
- or AEMA 310 (3) Statistical Methods 1 (M)
- or SOCI 350 (3) Statistics in Social Research
- or equivalent
- NUTR 200 (3) Contemporary Nutrition
- or NUTR 207 (3) Nutrition and Health (M)
- SOCI 222 (3) Urban Sociology
- or SOCI 234 (3) Population and Society

9 credits chosen from List B:

- ABEN 217 (3) Hydrology and Drainage (M)
- or AEPH 510 (3) Agricultural Micrometeorology (M)
- or GEOG 321 (3) Climatic Environments
- or GEOG 322 (3) Environmental Hydrology
- AGRI 250 (3) Principles of Ecological Agriculture (M)
- or AGRI 210 (3) Agro-Ecological History (M)
- or AGRI 411 (3) International Agriculture (M)
- AGEC 242 (3) Management Theories and Practices (M)
- or ECON 440 (3) Health Economics
- or PHIL 343 (3) Biomedical Ethics
- BIOL 205 (3) Biology of Organisms
- or AEBI 200 (3) Biology of Organisms (M)
- or AEBI 205 (3) Principles of Ecology (M)
- or BIOL 200 (3) Molecular Biology
- or BIOL 208 (3) Ecology
- or FDSC 211 (3) Biochemistry 1 (M)
- or PHGY 202 (3) Human Physiology: Body Functions
- or PLNT 201 (3) Comparative Plant Biology (M)
- SOCI 254 (3) Development and Underdevelopment
- or ANTH 212 (3) Anthropology of Development
- or ANTH 339 (3) Ecological Anthropology
- or GEOG 300 (3) Human Ecology in Geography

9 credits chosen from List C:

- BIOL 465 (3) Conservation Biology
- or BIOL 350 (3) Insect Biology and Control
- or ENTO 452 (3) Biocontrol of Insect Pests (M)
- or PLNT 361 (3) Pest Management and the Environment (M)
- or WILD 410 (3) Wildlife Ecology (M)
- or WOOD 410 (3) The Forest Ecosystem (M)
- GEOG 201 (3) Introductory Geo-Information Science
- or ABEN 330 (3) Introductory Geo-Information Science
- or CHEE 230 (3) Environmental Aspects of Technology
- or GEOG 302 (3) Environmental Management 1
- HIST 292 (3) History and the Environment
- or EDER 461 (3) Society and Change
- or SOCI 328 (3) Environmental Sociology
- MIMM 324 (3) Fundamental Virology
- or MIMM 314 (3) Immunology
- or MIMM 413 (3) Parasitology
- or PARA 438 (3) Immunology (M)
- SOCI 520 (3) Migration and Immigrant Groups
- or GEOG 498 (3) Humans in Tropical Environments (in Panama)
- or PSYC 533 (3) International Health Psychology
- or SOCI 550 (3) Sociology of Developing Societies

### 5.2 Economics and the Earth's Environment Domain

This Domain (54 credits including Core) is open only to students in the B.A. Faculty Program in Environment.

Adviser: Mr. Pete Barry, MSE Program Coordinator  
 email: info.mse@mcgill.ca  
 telephone: (514) 398-4306

Understanding Earth's geologic processes provides us with the knowledge to mitigate many of our society's environmental impacts due to resource extraction and waste disposal. This knowledge is not always enough, as economics often plays a controlling role in how we use and abuse our environment. This Domain educates students in the fundamentals of economics and Earth sciences. The fundamentals of economics are provided, as is their application to the effects of economic choices on Earth's environment. Examples of these applications include the economic effects of public policy towards resource industries and methods of waste disposal, and the potential effects of global warming on the global economy. Students also learn of minerals, rocks, soils, and waters which define much of Earth's environment and how these materials interact with each other and with the atmosphere. Courses in specific subdisciplines of Earth sciences

combined with courses presenting a global vision of how the Earth and its environment operate provide the student with the necessary knowledge of geologic processes. Examples of this knowledge include the effects of mineral and energy extraction on the environment and how industrial waste interacts with solids and liquids in the environment. The Earth science and economics studies merge in the final year when the students apply what they have learned in the Domain to current environmental issues.

Course descriptions and prerequisites can be found in the unit's Calendar entry. The most up-to-date information on courses being offered this academic year is provided in the Class Schedule, available on the Web at <http://www.mcgill.ca/minerva-students>.

**Courses offered at Macdonald Campus are marked with an (M). (Introductory Core Courses are offered on both campuses.)**

**NOTE: Students are required to take a maximum of 34 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 Domain prerequisites or co-requisites listed above.**

#### Core – Required Courses (18 credits)

ENVR 200	(3)	The Global Environment
ENVR 201	(3)	Society and Environment
ENVR 202	(3)	The Evolving Earth
ENVR 203	(3)	Knowledge, Ethics and Environment
ENVR 400	(3)	Environmental Thought
ENVR 401**	(3)	Environmental Research

\* Students taking ENVR 401 in Sept. 2002 must contact the Program Coordinator prior to registering, email: [info.mse@mcgill.ca](mailto:info.mse@mcgill.ca)

#### Required Courses for Domain (19 credits)

ECON 230D1	(3)	Microeconomic Theory
ECON 230D2	(3)	Microeconomic Theory
ECON 405	(3)	Natural Resource Economics
EPSC 210	(3)	Introduction to Mineralogy
EPSC 212	(4)	Introduction to Petrology
EPSC 243	(3)	Environmental Geology

#### Complementary Courses for Domain (17 credits)

3 credits of ecology selected from:

AEBI 205	(3)	Principles of Ecology (M)
BIOL 208	(3)	Ecology

3 credits of impact assessment selected from:

CHEE 430	(3)	Technology Impact Assessment
WILD 437	(3)	Assessing Environmental Impact (M)

6 credits of economics from the following list of courses:

AGEC 333	(3)	Resource Economics (M)
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

5 credits minimum of advanced courses selected from:

AGRI 435	(3)	Soil and Water Quality Management (M)
ANTH 339	(3)	Ecological Anthropology
BIOL 305	(3)	Diversity of Life
ECON 305	(3)	Industrial Organization
ECON 313	(3)	Economic Development 1
ECON 314	(3)	Economic Development 2
ECON 408D1	(3)	Public Sector Economics
ECON 408D2	(3)	Public Sector Economics
ECON 412	(3)	Topics in Economic Development 1
EPSC 312	(3)	Spectroscopy of Minerals
EPSC 334	(3)	Invertebrate Paleontology and Evolution
EPSC 402	(2)	Environmental Field School
GEOG 302	(3)	Environmental Management 1
GEOG 322	(3)	Environmental Hydrology
MATH 203	(3)	Principles of Statistics 1 (or equivalent)
SOCI 328	(3)	Environmental Sociology
SOIL 410	(3)	Soil Chemistry (M)
WILD 415	(2)	Conservation Law (M)

### 5.3 Environment and Development Domain

This Domain (54 credits including Core) is open only to students in the B.A. Faculty Program in Environment.

Adviser: Mr. Pete Barry, MSE Program Coordinator  
email: [info.mse@mcgill.ca](mailto:info.mse@mcgill.ca)  
telephone: (514) 398-4306

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.).

Course descriptions and prerequisites can be found in the unit's Calendar entry. The most up-to-date information on courses being offered this academic year is provided in the Class Schedule, available on the Web at <http://www.mcgill.ca/minerva-students>.  
**Courses offered at Macdonald Campus are marked with an (M). (Introductory Core Courses are offered on both campuses.)**

**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.**

#### Core – Required Courses (18 credits)

ENVR 200	(3)	The Global Environment
ENVR 201	(3)	Society and Environment
ENVR 202	(3)	The Evolving Earth
ENVR 203	(3)	Knowledge, Ethics and Environment
ENVR 400	(3)	Environmental Thought
ENVR 401*	(3)	Environmental Research

\* Students taking ENVR 401 in Sept. 2002 must contact the Program Coordinator prior to registering, email: [info.mse@mcgill.ca](mailto:info.mse@mcgill.ca)

#### Domain – Required Courses (15 credits)

ANTH 339	(3)	Ecological Anthropology
BIOL 208	(3)	Ecology
ECON 313	(3)	Economic Development 1
ECON 314	(3)	Economic Development 2
GEOG 302	(3)	Environmental Management 1

#### Domain – Complementary Courses (21 credits)

3 credits in statistics to be chosen from:

MATH 203	(3)	Principles of Statistics 1
PSYC 204	(3)	Introduction to Psychological Statistics (or equivalent)
SOCI 350	(3)	Statistics in Social Research

6 credits to be chosen from the following:

ECON 208	(3)	Microeconomic Analysis and Applications (NB: this course is a prerequisite for the required course ECON 313)
ANTH 418	(3)	Environment and Development
GEOG 408	(3)	Geography of Development
GEOG 410	(3)	Geography of Underdevelopment: Current Problems

12 credits to be chosen from the following:

AGEC 333	(3)	Resource Economics (M)
AGEC 430	(3)	Agriculture, Food and Resource Policy (M)
AGEC 442	(3)	Economics of International Agricultural Development (M)
AGRI 210	(3)	Agro-Ecological History (M)
AGRI 411	(3)	International Agriculture (M)
ANTH 349	(3)	Transformation of Developing Countries
ANTH 358	(3)	Process of Anthropological Research
ANTH 439	(3)	Theories of Development
ANTH 445	(3)	Property and Land Tenure
BIOL 465	(3)	Conservation Biology
BIOL 535	(3)	Political Ecology

BIOL 553	(3)	Neotropical Environments (in Panama)
BIOL 560	(3)	Aquatic Conservation
ECON 326	(3)	Ecological Economics
ECON 405	(3)	Natural Resource Economics
ECON 412	(3)	Topics in Economic Development 1
ECON 416	(3)	Topics in Economic Development 2
GEOG 300	(3)	Human Ecology in Geography
GEOG 305	(3)	Geography of Soils
GEOG 322	(3)	Environmental Hydrology
GEOG 331	(3)	Urban Social Geography
GEOG 404	(3)	Environmental Management 2 (in Panama or Africa)
GEOG 408	(3)	Geography of Development
GEOG 496	(3)	Geographical Excursion
GEOG 498	(3)	Humans in Tropical Environments (in Panama)
GEOG 500	(3)	Geography of Regional Identity
GEOG 502	(3)	Geography of Northern Development
GEOG 510	(3)	Humid Tropical Environments
GEOG 551	(3)	Environmental Decisions
HIST 292	(3)	History and the Environment
HIST 473D1	(3)	Topics: Environmental History
HIST 473D2	(3)	Topics: Environmental History
INTD 497	(3)	Research Seminar on International Development
MGPO 440	(3)	Strategies for Sustainable Development
MGPO 567	(3)	Business in Society
NUTR 406	(3)	Ecology of Human Nutrition ( <i>M</i> )
NUTR 501	(3)	Nutrition in Developing Countries ( <i>M</i> )
PARA 410	(3)	Environment and Infection ( <i>M</i> )
POLI 338	(3)	Developing Areas/Topics 1
POLI 422	(3)	Developing Areas/ Topics 2
POLI 445	(3)	IPE: North-South Relations
POLI 472	(3)	Developing Areas/ Social Movements
POLI 522	(3)	Developing Areas/Honours Seminar
SOCI 328	(3)	Environmental Sociology
SOCI 354	(3)	Dynamics of Industrial Societies
SOCI 550	(3)	Sociology of Developing Societies
SWRK 532	(3)	International Social Work
URBP 505	(3)	Geographic Information Systems
WILD 375	(3)	Issues in Environmental Sciences ( <i>M</i> )
WILD 380	(3)	Law and Land Use Policy ( <i>M</i> )
WILD 415	(2)	Conservation Law ( <i>M</i> )

## 6 B.Sc. Major Program in Environment

The B.Sc. Major has two components: Core and Domain. Students follow three steps in their degree program.

- 1. Introductory Core:** The Core consists of four introductory courses 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 component of the environment. Additional Domains are being developed in several areas. More information on these is available on the MSE website <http://www.mcgill.ca/mse>.
- 3. Final Core:** 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 B.Sc. Major in Environment, students must:

- register in a Domain;
- pass all courses counted towards 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
- fulfill all Faculty requirements as specified for the B.Sc. in the Faculty of Science **section 3** which includes meeting the minimum credit requirement as specified in their letter of admission.

**B.SC. MAJOR PROGRAM IN ENVIRONMENT** (54 to 63 credits – depending upon Domain selected)

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

The Core courses are listed in the Domain descriptions.

**Domain** (36 to 45 credits – depending upon Domain selected) one MSE Domain selected from those available to students in the B.Sc. Major.

Currently available:

- Atmospheric Environment and Air Quality (39 credits)
- Biodiversity and Conservation (42 credits)
- Earth Sciences and Economics (45 credits)
- Ecological Determinants of Health – Population Stream or Cellular Stream (39 credits)
- Land Surface Processes and Environmental Change (42 credits)
- Environmetrics (42 credits)
- Food Production and the Environment (45 credits)
- Renewable Resource Management (42 credits)
- Water Environments and Ecosystems – Physical Stream or Biological Stream (36 credits)

Additional Domains TBA

Each Domain has different requirements which are listed below. Course descriptions and prerequisites can be found in the unit's Calendar entry. The most up-to-date information on courses being offered this academic year is provided in the Class Schedule, available on the Web at <http://www.mcgill.ca/minerva-students>.

### 6.1 Atmospheric Environment and Air Quality Domain

This Domain (57 credits including Core) is open only to students in the B.Sc. Major in Environment program.

Adviser: Professor Peter Yau  
email: [yau@rainband.meteo.mcgill.ca](mailto:yau@rainband.meteo.mcgill.ca)  
telephone: (514) 398-3719

The rapid expansion of industrialization has been accompanied with a host of environmental problems, many, if not most, involve the atmosphere. Some problems are of a local nature, such as air pollution in large urban centres, while others are global, or at least reach areas far removed from industrial activities.

The emphasis in this Domain is on the mechanisms of atmospheric flow and on atmospheric chemistry. Courses examine how the atmosphere transports pollution, lifting it to great heights into the stratosphere or keeping it trapped near the ground, moving it around the globe or imprisoning it locally, or how it simply cleanses itself of the pollution through rainfall. The Domain also gives students the training required to understand the important chemical reactions taking place within the atmosphere, as well as the know-how necessary to measure and analyze atmospheric constituents.

Course descriptions and prerequisites can be found in the unit's Calendar entry. The most up-to-date information on courses being offered this academic year is provided in the Class Schedule, available on the Web at <http://www.mcgill.ca/minerva-students>. **Courses offered at Macdonald Campus are marked with an (M). (Introductory Core Courses are offered on both campuses.)**

**NOTE: Students are required to take a maximum of 31 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.**

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

ENVR 200	(3)	The Global Environment
ENVR 201	(3)	Society and Environment
ENVR 202	(3)	The Evolving Earth
ENVR 203	(3)	Knowledge, Ethics and Environment
ENVR 400	(3)	Environmental Thought
ENVR 401*	(3)	Environmental Research

\* Students taking ENVR 401 in Sept. 2002 must contact the Program Coordinator prior to registering, email: info.mse@mcgill.ca

**Domain – Required Courses** (18 credits)

ATOC 214	(3)	Intro. to the Physics of the Atmosphere
ATOC 219	(3)	Intro to Atmospheric Chem. or CHEM 219
ATOC 308	(3)	Principles of Remote Sensing or GEOG 308
ATOC 315	(3)	Water in the Atmosphere
ATOC 402	(3)	Atmosphere-Ocean Transports
CHEM 307	(3)	Environmental Analysis

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

6 credits, minimum, from:

CHEM 257D	(4)	Analytical Chemistry or FDSC 213 (3) Analytical Chemistry 1 (M)
MATH 222	(3)	Calculus 3 or AEMA 202 (3) Calculus (M)

3 credits from:

MATH 203	(3)	Principles of Statistics 1 or AEMA 310 (3) Statistical Methods 1 (M) or equivalent
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9 credits (at least 6 credits of which are at the 300 level or above) chosen from the following:

AEPH 510	(3)	Agricultural Micrometeorology (M)
ATOC 215	(3)	Weather Systems and Climate
ATOC 419	(3)	Adv. in Chem. of Atmosphere or CHEM 419
ATOC 515	(3)	Turbulence in the Atmosphere and Oceans
ATOC 540	(3)	Synoptic Meteorology 1
CHEE 230	(3)	Environmental Aspects of Technology
CHEM 273	(1)	Chemical Kinetics
CHEM 377	(3)	Instrumental Analysis 2
CIVE 225	(3)	Environmental Engineering
COMP 208	(3)	Computers in Engineering
GEOG 505	(3)	Global Biogeochemistry
MATH 223	(3)	Linear Algebra
MATH 315	(3)	Ordinary Differential Equations or AEMA 205 (4) Differential Equations (M)
WILD 333	(3)	Physical and Biological Aspects of Pollution(M)

3 credits chosen from the following:

ANTH 206	(3)	Environment and Culture
ANTH 418	(3)	Environment and Development
CMPL 580	(3)	Environment and the Law
ECON 225	(3)	Economics of the Environment
ECON 347	(3)	Economics of Climate Change
GEOG 302	(3)	Environmental Management 1
GEOG 404	(3)	Environmental Management 2 (in Panama or Africa))
POLI 466	(3)	Public Policy Analysis
RELG 270	(3)	Religious Ethics and the Environment

**6.2 Biodiversity and Conservation Domain**

This Domain (60 credits including Core) is open only to students in the B.Sc. Major in Environment program.

Advisers: Professor Graham Bell  
email: gbell2@maclean.mcgill.ca  
telephone: (514) 398-4086 local 4087

Professor David Green  
email: david.m.green@mcgill.ca  
telephone: (514) 398-4086 local 4088

This Domain links the academic study of biological diversity with the applied field of conservation biology. The study of biological diversity, or 'biodiversity', lies at the intersection of evolution with ecology and genetics, combining the subdisciplines of evolutionary ecology, evolutionary genetics and ecological genetics. It has two main branches, the creation of diversity and the maintenance of diversity. Both processes are governed by a general mechanism of selection acting over different scales of space and time. This gives rise to a distinctive set of principles and generalizations that regulate rates of diversification and levels of diversity, as well as the abundance or rarity of different species. Conservation biology constitutes the application of these principles in the relevant social and economic context to the management of natural systems, with the object of preventing the extinction of rare species and maintaining the diversity of communities. As the impact of industrialization and population growth on natural systems has become more severe, conservation has emerged as an important area of practical endeavour.

Course descriptions and prerequisites can be found in the unit's Calendar entry. The most up-to-date information on courses being offered this academic year is provided in the Class Schedule, available on the Web at <http://www.mcgill.ca/minerva-students>. **Courses offered at Macdonald Campus are marked with an (M). (Introductory Core Courses are offered on both campuses.)**

**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.**

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

ENVR 200	(3)	The Global Environment
ENVR 201	(3)	Society and Environment
ENVR 202	(3)	The Evolving Earth
ENVR 203	(3)	Knowledge, Ethics and Environment
ENVR 400	(3)	Environmental Thought
ENVR 401*	(3)	Environmental Research

\* Students taking ENVR 401 in Sept. 2002 must contact the Program Coordinator prior to registering, email: info.mse@mcgill.ca

**Domain – Required Courses** (15 credits)

9 credits, basic courses in the biological principles of diversity, systematics and conservation

BIOL 304	(3)	Evolution
BIOL 305	(3)	Diversity of Life
BIOL 465	(3)	Conservation Biology

6 credits, interface between science, policy and management

ECON 225	(3)	Economics of the Environment
GEOG 302	(3)	Environmental Management 1

**Domain – Complementary Courses** (27 credits)

6 credits of ecology and statistics:

BIOL 208	(3)	Ecology or AEBI 205 (3) Principles of Ecology (M)
BIOL 373	(3)	Biostatistical Analysis or AEMA 310(3) Statistical Methods 1 (M)

3 credits chosen from:

ANTH 418	(3)	Environment and Development
GEOG 408	(3)	Geography of Development
GEOG 410	(3)	Geography of Underdevelopment: Current Problems

3 credits chosen from:

- BIOL 358\* (3) Canadian Flora
- PLNT 358\* (3) Flowering Plant Diversity (M)
- ZOOL 312 (3) Zoological Systematics and Evolution (M)

\* PLNT 358 and BIOL 358 are courses with substantially the same content, taught on different campuses. Only one may be taken. See the Calendar listing for these courses for information on the required field component in summer prior to first classes.

One of PLNT 358/BIOL 358 or ZOOL 312 must be taken to satisfy Domain requirements, the other may be chosen as a complementary course for List III.

3 credits, one of the following field courses:

- BIOL 331 (3) Ecology/Behaviour Field Course (at Mont St. Hilaire)
- BIOL 334 (3) Field Course in Applied Tropical Ecology (in Barbados)
- BIOL 553 (3) Neotropical Environments (in Panama)
- GEOG 495 (3) Field Studies – Physical Geography (at Mont St. Hilaire)
- GEOG 497 (3) Ecology of Coastal Waters (on Bay of Fundy)
- GEOG 499 (3) Subarctic Field Studies in Geography (in Schefferville)
- WILD 475 (3) Desert Ecology (in Arizona)

12 credits chosen from the following three course lists, of which 6 must be 300-level or above:

6 credits from List I: courses dealing with general scientific principles.

- ABEN 330 (3) GIS for Biosystems Management (M)
- BIOL 324 (3) Ecological Genetics
- BIOL 341 (3) History of Life
- BIOL 432 (3) Limnology
- BIOL 441 (3) Biological Oceanography
- BIOL 473 (3) Ecology of Aquatic Invertebrates
- BIOL 505 (3) Advanced Seminar in Biodiversity & Systematics
- BIOL 542 (3) Marine Biology
- BIOL 560 (3) Aquatic Conservation
- GEOG 201 (3) Introductory Geo-Information Science
- GEOG 272 (3) Earth's Changing Surface
- GEOG 350 (3) Ecological Biogeography
- MICR 331 (3) Microbial Ecology (M)
- NRSC 421 (3) Topics in Wildlife Conservation (M)
- PLNT 460 (3) Plant Ecology (M)
- WILD 375 (3) Issues in Environmental Sciences (M)
- WILD 410 (3) Wildlife Ecology (M)
- WILD 437 (3) Assessing Environmental Impact (M)
- WOOD 410 (3) The Forest Ecosystem (M)
- WOOD 420 (3) Environmental Issues in Forestry (M)
- ZOOL 313 (3) Zoogeography (M)

A second field course from the Domain curriculum may also be taken.

3 credits from List II: courses dealing with societal issues and principles:

- AGEC 333 (3) Resource Economics (M)
- ANTH 339 (3) Ecological Anthropology
- ECON 326 (3) Ecological Economics
- GEOG 321 (3) Climatic Environments
- GEOG 404 (3) Environmental Management 2 (in Panama)
- GEOG 510 (3) Humid Tropical Environments
- SOCI 328 (3) Environmental Sociology
- WILD 415 (2) Conservation Law (M) (If this course is taken, one additional credit of complementary courses must be taken.)

3 credits from List III: courses dealing with particular groups of organisms:

- BIOL 327 (3) Herpetology
- BIOL 351 (3) The Biology of Invertebrates
- BIOL 354 (3) Biology of Birds

- BIOL 358 (3) Canadian Flora
- or PLNT 358 (3) Flowering Plant Diversity (M)
- BIOL 437 (3) Advanced Invertebrate Zoology
- ENTO 440 (3) Systematic Entomology (M)
- PLNT 304 (3) Biology of Fungi (M)
- PLNT 458 (3) Flowering Plant Systematics (M)
- WILD 420 (3) Ornithology (M)
- ZOOL 307 (3) Natural History of the Vertebrates (M)
- ZOOL 312 (3) Zoological Systematics and Evolution (M)
- ZOOL 424 (3) Parasitology (M)

### 6.3 Earth Sciences and Economics Domain

This Domain (63 credits including Core) is open only to students in the B.Sc. Major in Environment program.

Adviser: Mr. Pete Barry, MSE Program Coordinator  
email: info.mse@mcgill.ca  
telephone: (514) 398-4306

The resources necessary for human society are extracted from the Earth, used as raw materials in our factories and refineries, and then returned to the Earth as waste. Geological processes produce resources humans depend on, and they also determine the fate of wastes in the environment. Understanding Earth's geologic processes provides us with the knowledge to mitigate many of our society's environmental impacts due to resource extraction and waste disposal. Additionally, economics frequently affects what energy sources power our society and how our wastes are treated. Earth sciences and economics are essential for our understanding of the many mechanisms, both physical and social, that affect Earth's environment.

This Domain includes the fundamentals of each discipline. Students learn of minerals, rocks, soils, and waters and how these materials interact with each other and with the atmosphere. Fundamental economic theory and the economic effects of public policy towards resource industries, methods of waste disposal, and the potential effects of global warming on the global economy are also explored.

Course descriptions and prerequisites can be found in the unit's Calendar entry. The most up-to-date information on courses being offered this academic year is provided in the Class Schedule, available on the Web at <http://www.mcgill.ca/minerva-students>. **Courses offered at Macdonald Campus are marked with an (M). (Introductory Core Courses are offered on both campuses.)**

**NOTE: Students are required to take a maximum of 34 credits at the 200 level and a minimum of 15 credits at the 400 level or higher in this program. This includes Core and Required courses.**

#### Core - Required Courses (18 credits)

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

\* Students taking ENVR 401 in Sept. 2002 must contact the Program Coordinator prior to registering, email: info.mse@mcgill.ca

#### Required Courses for Domain (25 credits)

- ECON 230D1 (3) Microeconomic Theory
- ECON 230D2 (3) Microeconomic Theory
- ECON 405 (3) Natural Resource Economics
- EPSC 210 (3) Introduction to Mineralogy
- EPSC 212 (4) Introduction to Petrology
- EPSC 220 (3) Principles of Geochemistry
- EPSC 243 (3) Environmental Geology
- EPSC 425 (3) Depositional Environments & Sequence Stratigraphy



**Complementary Courses** (20 credits)

12 credits from List A

AGEC 333	(3)	Resource Economics ( <i>M</i> )
BIOL 208	(3)	Ecology
or AEBI 205	(3)	Principles of Ecology ( <i>M</i> )
CHEE 430	(3)	Technology Impact Assessment
or WILD 437	(3)	Assessing Environmental Impact ( <i>M</i> )
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

8 credits, minimum, from List B

AGRI 435	(3)	Soil and Water Quality Management ( <i>M</i> )
ANTH 339	(3)	Ecological Anthropology
ATOC 210	(3)	Introduction to Atmospheric Science
ATOC 220	(3)	Introduction to Oceanic Sciences
BIOL 305	(3)	Diversity of Life
ECON 305	(3)	Industrial Organization
ECON 313	(3)	Economic Development 1
ECON 314	(3)	Economic Development 2
ECON 408D1	(3)	Public Sector Economics
ECON 408D2	(3)	Public Sector Economics
ECON 412	(3)	Topics in Economic Development 1
EPSC 312	(3)	Spectroscopy of Minerals
EPSC 334	(3)	Invertebrate Paleontology and Evolution
EPSC 401	(3)	Advanced Environmental Geology
EPSC 402	(2)	Environmental Field School
EPSC 483D1	(3)	Independent Studies 2
EPSC 483D2	(3)	Independent Studies 2
EPSC 519	(3)	Isotope Geology
EPSC 542	(3)	Chemical Oceanography
EPSC 549	(3)	Hydrogeology
EPSC 580	(3)	Aqueous Geochemistry
EPSC 590	(3)	Applied Geochemistry Seminar
GEOG 302	(3)	Environmental Management 1
GEOG 322	(3)	Environmental Hydrology
SOCI 328	(3)	Environmental Sociology
SOIL 410	(3)	Soil Chemistry ( <i>M</i> )

**6.4 Ecological Determinants of Health Domain**

This Domain (57 credits including Core) is open only to students in the B.Sc. Major in Environment program.

Adviser: Mr. Pete Barry, MSE Program Coordinator  
email: info.mse@mcgill.ca  
telephone: (514) 398-4306

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

Course descriptions and prerequisites can be found in the unit's Calendar entry. The most up-to-date information on courses being offered this academic year is provided in the Class Schedule,

available on the Web at <http://www.mcgill.ca/minerva-students>.

**Courses offered at Macdonald Campus are marked with an (M). (Introductory Core Courses are offered on both campuses.)**

**Ecological Determinants of Health Domain – Population Stream**

This Domain (57 credits) is open only to students in the B.Sc. Major in Environment program.

**NOTE: Students are required to take a maximum of 31 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.**

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

ENVR 200	(3)	The Global Environment
ENVR 201	(3)	Society and Environment
ENVR 202	(3)	The Evolving Earth
ENVR 203	(3)	Knowledge, Ethics and Environment
ENVR 400	(3)	Environmental Thought
ENVR 401*	(3)	Environmental Research

\* Students taking ENVR 401 in Sept. 2002 must contact the Program Coordinator prior to registering, email: info.mse@mcgill.ca

**Required Courses for Domain - Population Stream** (6 credits)

NUTR 361	(3)	Environmental Toxicology ( <i>M</i> )
PARA 410	(3)	Environment and Infection ( <i>M</i> )

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

18 credits from the following List A:

CELL 204	(4)	Genetics ( <i>M</i> )
or BIOL 202	(3)	Basic Genetics
FDSC 211	(3)	Biochemistry 1 ( <i>M</i> )
or BIOL 200	(3)	Molecular Biology
or BIOL 201	(3)	Cell Biology and Metabolism
MATH 203	(3)	Principles of Statistics 1
or AEMA 310	(3)	Statistical Methods 1 ( <i>M</i> )
or equivalent		
NUTR 207	(3)	Nutrition and Health ( <i>M</i> )
or ANSC 330	(3)	Fundamentals of Nutrition ( <i>M</i> )
or NUTR 307	(3)	Human Nutrition ( <i>Video Conference: Downtown and Macdonald</i> )
SOCI 234	(3)	Population and Society
or SOCI 222	(3)	Urban Sociology
WOOD 410	(3)	The Forest Ecosystem ( <i>M</i> )
or AEMA 306	(3)	Mathematical Methods in Ecology ( <i>M</i> )
or BIOL 465	(3)	Conservation Biology
or BIOL 483	(3)	Stats in Population Biology
or MICR 331	(3)	Microbial Ecology ( <i>M</i> )
or PLNT 460	(3)	Plant Ecology ( <i>M</i> )
or WILD 410	(3)	Wildlife Ecology ( <i>M</i> )

6 credits from the following List B:

ABEN 217	(3)	Hydrology and Drainage ( <i>M</i> )
or AEPH 510	(3)	Agricultural Micrometeorology ( <i>M</i> )
or AGRI 250	(3)	Principles of Ecological Agriculture ( <i>M</i> )
or GEOG 321	(3)	Climatic Environments
or GEOG 322	(3)	Environmental Hydrology
AGEC 242	(3)	Management Theories and Practices ( <i>M</i> )
or BIOL 535	(3)	Political Ecology
or ECON 208	(3)	Microeconomic Analysis and Applications
or EDER 461	(3)	Society and Change
or PHIL 343	(3)	Biomedical Ethics
SOCI 254	(3)	Development and Underdevelopment
or AGRI 210	(3)	Agro-Ecological History ( <i>M</i> )
or ANTH 212	(3)	Anthropology of Development
or HIST 292	(3)	History and the Environment

9 credits from the following list C:

CHEE 230	(3)	Environmental Aspects of Technology
or ABEN 330	(3)	GIS for Biosystems Management ( <i>M</i> )

- or GEOG 201 (3) Introductory Geo-Information Science
- or GEOG 302 (3) Environmental Management 1
- or WILD 437 (3) Assessing Environmental Impact (M)
- MIMM 324 (3) Fundamental Virology
- or EPIB 637L (3) Infectious and Parasitic Disease Epidemiology
- or MIMM 314 (3) Immunology
- or MIMM 413 (3) Parasitology
- or PARA 400 (3) Eukaryotic Cells and Viruses (M)
- or PARA 438 (3) Immunology (M)
- NUTR 406 (3) Ecology of Human Nutrition (M)
- or AGRI 411 (3) International Agriculture (M)
- or NUTR 420 (3) Food Toxicants and Health Risks (M)
- or NUTR 501 (3) Nutrition in Developing Countries (M)
- or NUTR 512 (3) Herbs, Foods and Phytochemicals (*Video Conference: Downtown and Macdonald*)
- SOCI 328 (3) Environmental Sociology
- or GEOG 300 (3) Human Ecology in Geography
- or GEOG 498 (3) Humans in Tropical Environments (in Panama)
- or PSYC 533 (3) International Health Psychology
- WILD 333 (3) Physical and Biological Aspects of Pollution (M)
- or ABEN 322 (3) Agro-Food Waste Management (M)
- or BIOL 350 (3) Insect Biology and Control
- or ENTO 452 (3) Biocontrol of Insect Pests (M)
- or PLNT 361 (3) Pest Management and the Environment (M)

**Ecological Determinants of Health Domain – Cellular Stream**

This Domain (57 credits) is open only to students in the B.Sc. Major in Environment program.

**NOTE: Students are required to take a maximum of 31 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.**

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

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

\* Students taking ENVR 401 in Sept. 2002 must contact the Program Coordinator prior to registering, email: info.mse@mcgill.ca

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

- NUTR 361 (3) Environmental Toxicology (M)
- PARA 410 (3) Environment and Infection (M)

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

18 credits chosen from List A:

- AEBI 202 (3) Cellular Biology (M)
- or ANSC 234 (3) Biochemistry 2 (M)
- or BIOL 201 (3) Cell Biology and Metabolism
- CELL 204 (4) Genetics (M)
- or BIOL 202 (3) Basic Genetics
- FDSC 211 (3) Biochemistry 1 (M)
- or BIOL 200 (3) Molecular Biology
- MATH 203 (3) Principles of Statistics 1
- or AEMA 310 (3) Statistical Methods 1 (M)
- or equivalent
- NUTR 307 (3) Human Nutrition (*Video Conference: Downtown and Macdonald*)
- or ANSC 330 (3) Fundamentals of Nutrition (M)
- SOCI 234 (3) Population and Society
- or SOCI 222 (3) Urban Sociology

6 credits chosen from List B:

- MICR 341 (3) Mechanisms of Pathogenicity (M)
- or MIMM 314 (3) Immunology
- or PARA 438 (3) Immunology (M)
- PHAR 300 (3) Drug Action
- or ANSC 424 (3) Metabolic Endocrinology (M)
- PHGY 209 (3) Mammalian Physiology 1
- or ANSC 323 (4) Mammalian Physiology (M)

9 credits chosen from List C:

- ABEN 217 (3) Hydrology and Drainage (M)
- or AEPH 510 (3) Agricultural Micrometeorology (M)
- or GEOG 321 (3) Climatic Environments
- or GEOG 322 (3) Environmental Hydrology
- CHEE 230 (3) Environmental Aspects of Technology
- or ABEN 322 (3) Agro-Food Waste Management (M)
- or GEOG 302 (3) Environmental Management 1
- or WILD 437 (3) Assessing Environmental Impact (M)
- PATH 300 (3) Human Disease
- or BIOL 350 (3) Insect Biology and Control
- or ENTO 452 (3) Biocontrol of Insect Pests (M)
- or MIMM 324 (3) Fundamental Virology
- or MIMM 413 (3) Parasitology
- or NUTR 406 (3) Ecology of Human Nutrition (M)
- or NUTR 420 (3) Food Toxicants and Health Risks (M)
- or NUTR 512 (3) Herbs, Foods and Phytochemicals (*Video Conference: Downtown and Macdonald*)
- or PARA 400 (3) Eukaryotic Cells and Viruses (M)
- or PLNT 361 (3) Pest Management and the Environment (M)
- WILD 333 (3) Physical and Biological Aspects of Pollution (M)
- or ABEN 518 (3) Pollution Control for Agriculture (M)
- or CHEM 307 (3) Environmental Analysis
- WOOD 410 (3) The Forest Ecosystem (M)
- or BIOL 432 (3) Limnology
- or BIOL 465 (3) Conservation Biology
- or MICR 331 (3) Microbial Ecology (M)
- or PLNT 304 (3) Biology of Fungi (M)
- or PLNT 460 (3) Plant Ecology (M)
- or WILD 410 (3) Wildlife Ecology (M)

**6.5 Environmetrics Domain**

This Domain (60 credits including Core) is open only to students in the B.Sc. Major in Environment program.

Adviser: Professor Dutilleul  
 email: dutilleul@macdonald.mcgill.ca  
 telephone: (514) 398-7851 ext. 7870

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 required courses for the Environmetrics Domain is composed primarily of six statistics courses and one mathematically-oriented course with biological and ecological applications. The list is completed by three general courses that refine the topics introduced in the MSE core courses by focusing on the ecology of living organisms, soil sciences or water resources, and impact assessment. These three courses should allow the students to understand their interlocutors and be understood by them in their future job. Students can further develop their background in applied or mathematical statistics and their expertise in environmental sciences, by taking two complementary courses along each of two axes: statistics and mathematics, and environmental sciences. The possibility of an internship is also offered to students to provide them with preliminary professional experience.

Course descriptions and prerequisites can be found in the unit's Calendar entry. The most up-to-date information on courses being offered this academic year is provided in the Class Schedule, available on the Web at <http://www.mcgill.ca/minerva-students>. **Courses offered at Macdonald Campus are marked with an (M).** (Introductory Core Courses are offered on both campuses.)

**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.**

#### Core – Required Courses (18 credits)

ENVR 200	(3)	The Global Environment
ENVR 201	(3)	Society and Environment
ENVR 202	(3)	The Evolving Earth
ENVR 203	(3)	Knowledge, Ethics and Environment
ENVR 400	(3)	Environmental Thought
ENVR 401*	(3)	Environmental Research

\* Students taking ENVR 401 in Sept. 2002 must contact the Program Coordinator prior to registering, email: [info.mse@mcgill.ca](mailto:info.mse@mcgill.ca)

#### Domain – Required Course (3 credits)

AEMA 414	(3)	Temporal and Spatial Statistics (M)
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#### Domain – Complementary Courses (39 credits)

18 credits chosen from:

BIOL 208	(3)	Ecology
or AEBI 205	(3)	Principles of Ecology (M)
BIOL 309	(3)	Mathematical Models in Biology
or AEMA 306	(3)	Mathematical Methods in Ecology (M)
CIVE 555	(3)	Environmental Data Analysis
or AEMA 411	(3)	Experimental Designs (M)
GEOG 201	(3)	Introductory Geo-Information Science
or ABEN 330	(3)	GIS for Biosystems Management (M)
GEOG 351	(3)	Quantitative Methods
or BIOL 483	(3)	Stats in Population Biology
MIME 308	(3)	Social and Economic Impacts of Technology
or WILD 437	(3)	Assessing Environmental Impact (M)

3 credits chosen from:

ABEN 217	(3)	Hydrology and Drainage (M)
CIVE 323	(3)	Hydrology and Water Resources
EPSC 243	(3)	Environmental Geology
GEOG 305	(3)	Geography of Soils
GEOG 322	(3)	Environmental Hydrology
SOIL 210	(3)	Principles of Soil Science (M)

6 credits of statistics, one of the following three options. NB: Students interested in pursuing advanced statistics courses should choose Option 2.

Option 1:

MATH 203	(3)	Principles of Statistics 1
and MATH 204	(3)	Principles of Statistics 2

or Option 2:

MATH 323	(3)	Probability Theory
and MATH 324	(3)	Statistics

or Option 3:

BIOL 373	(3)	Biostatistical Analysis
or AEMA 310	(3)	Statistical Methods 1 (M)

and one 3-credit applied statistics course from the statistics and mathematics list given below

6 credits of statistics and mathematics chosen from:

ABEN 252	(3)	Structured Computer Programming (or equivalent) (M)
ABEN 319	(3)	Applied Mathematics (or equivalent) (M)
AEMA 403	(3)	Environmetrics Stage (internship) (M)
MATH 223	(3)	Linear Algebra
MATH 423	(3)	Regression and Analysis of Variance
MATH 447	(3)	Stochastic Processes

MATH 525	(4)	Sampling Theory and Applications
SOCI 461	(3)	Quantitative Data Analysis
SOCI 504	(3)	Quantitative Methods 1
SOCI 505	(3)	Quantitative Methods 2
SOCI 580	(3)	The Design and Practice of Social Research

6 credits in environmental sciences chosen from:

BIOL 331	(3)	Ecology/Behavior Field Course (at Mont St. Hilaire)
BIOL 526	(3)	Plants and Extreme Environments
GEOG 300	(3)	Human Ecology in Geography
GEOG 302	(3)	Environmental Management 1
GEOG 494	(3)	Urban Field Studies
GEOG 499	(3)	Subarctic Field Studies in Geography: Schefferville
MIME 451	(3)	Environmental Controls
PLNT 460	(3)	Plant Ecology (M)
WILD 333	(3)	Physical and Biological Aspects of Pollution (M)
WILD 401	(4)	Fisheries and Wildlife Management (M)
WOOD 300	(3)	Urban Forests and Trees (M)
WOOD 420	(3)	Environmental Issues in Forestry (M)
ZOOL 313	(3)	Zoogeography (M)

## 6.6 Food Production and Environment Domain

This Domain (63 credits including Core) is open only to students in the B.Sc. Major in Environment program.

Adviser: Professor Danielle Donnelly  
telephone: (514) 398-7851 ext. 7856

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 while trying to minimize environmental damage. When negative effects due to agricultural activities do occur, they are not usually the classic point source effects that we have come to associate with industry or large cities. Rather, the effects are over extremely large land areas cumulating, perhaps, in pollution of river systems or lakes some distance away. As world populations grow, and as diets change, potentially negative interactions between agricultural systems and other facets of the environment will become more frequent. In the same way, urban sprawl will make conflicts between agriculture and urbanites more common.

Course descriptions and prerequisites can be found in the unit's Calendar entry. The most up-to-date information on courses being offered this academic year is provided in the Class Schedule, available on the Web at <http://www.mcgill.ca/minerva-students>. **Courses offered at Macdonald Campus are marked with an (M).** (Introductory Core Courses are offered on both campuses.)

#### Recommended Prerequisite or Corequisite Courses for Domain

(6 credits, minimum)

FDSC 211	(3)	Biochemistry 1 (M)
or BIOL 112	(3)	Cell and Molecular Biology
or CEGEP equivalent (e.g., CEGEP objective 00XU)		
FDSC 230	(4)	Organic Chemistry (M)
or CHEM 212	(4)	Introductory Organic Chemistry 1
or CEGEP equivalent (e.g., CEGEP objective 00XV)		

**NOTE: Students are required to take a maximum of 34 credits at the 200 level and a minimum of 15 credits at the 400 level or higher in this program. This includes Core and Required courses, but does not include the Domain prerequisites or co-requisites listed above.**

#### Core - Required Courses (18 credits)

ENVR 200	(3)	The Global Environment
ENVR 201	(3)	Society and Environment
ENVR 202	(3)	The Evolving Earth
ENVR 203	(3)	Knowledge, Ethics and Environment

ENVR 400 (3) Environmental Thought  
 ENVR 401\* (3) Environmental Research  
 \* Students taking ENVR 401 in Sept. 2002 must contact the Program Coordinator prior to registering, email: info.mse@mcgill.ca

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

AGRI 210 (3) Agro-ecological History (M)  
 PLNT 211 (3) Principles of Plant Science (M)  
 PLNT 300 (3) Cropping Systems (M)  
 WILD 375 (3) Issues in Environmental Sciences (M)

**Complementary Courses (33 credits)**

15 or 16 credits of Basic Sciences

AEBI 205 (3) Principles of Ecology (M)  
 or BIOL 208 (3) Ecology  
 AEMA 310 (3) Statistical Methods 1 (M)  
 or equivalent  
 AGRI 250 (3) Principles of Ecological Agriculture (M)  
 or ANSC 250 (3) Principles of Animal Science (M)  
 CELL 204 (4) Genetics (M)  
 or BIOL 202 (3) Basic Genetics  
 SOIL 210 (3) Principles of Soil Science (M)  
 or GEOG 305 (3) Geography of Soils

12 credits of Applied Sciences

ABEN 322 (3) Agro-Food Waste Management (M)  
 ABEN 518 (3) Pollution Control for Agriculture (M)  
 AGRI 411 (3) International Agriculture (M)  
 AGRI 430 (3) Ecological Agricultural Systems (M)  
 AGRI 435 (3) Soil and Water Quality Management (M)  
 AGRI 550 (3) Sustained Tropical Agriculture (in Panama)  
 ANSC 501 (3) Advanced Animal Production Systems (M)  
 BIOL 465 (3) Conservation Biology  
 BIOL 553 (3) Neotropical Environments (in Panama)  
 FDSC 200 (3) Introduction to Food Science (M)  
 or NUTR 207 (3) Nutrition and Health (M)  
 FDSC 535 (3) Food Biotechnology (M)  
 GEOG 302 (3) Environmental Management 1  
 GEOG 322 (3) Environmental Hydrology  
 or ABEN 217 (3) Hydrology and Drainage (M)  
 MICR 331 (3) Microbial Ecology (M)  
 NRSC 521 (3) Soil Microbiology and Biochemistry (M)  
 NUTR 361 (3) Environmental Toxicology (M)  
 NUTR 406 (3) Ecology of Human Nutrition (M)  
 PARA 410 (3) Environment and Infection (M)  
 PLNT 361 (3) Pest Management and the Environment (M)  
 PLNT 434 (3) Weed Biology and Control (M)  
 SOIL 315 (3) Soil Fertility and Fertilizers (M)  
 SOIL 410 (3) Soil Chemistry (M)  
 WILD 401 (4) Fisheries and Wildlife Management (M)  
 WILD 333 (3) Physical and Biological Aspects of Pollution (M)  
 WILD 437 (3) Assessing Environmental Impact (M)

6 credits in Social Sciences / Humanities

AGEC 200 (3) Principles of Microeconomics (M)  
 AGECE 320 (3) Economics of Agricultural Production (M)  
 AGECE 333 (3) Resource Economics (M)  
 or ECON 405 (3) Natural Resource Economics  
 AGECE 430 (3) Agriculture, Food and Resource Policy (M)  
 AGECE 442 (3) Economics of International Agricultural Development (M)  
 ANTH 418 (3) Environment and Development  
 ECON 225 (3) Economics of the Environment  
 GEOG 404 (3) Environmental Management 2 (in Panama)  
 GEOG 410 (3) Geography of Underdevelopment: Current Problems  
 GEOG 498 (3) Humans in Tropical Environments (in Panama)  
 GEOG 510 (3) Humid Tropical Environments  
 SOCI 254 (3) Development and Underdevelopment  
 WILD 415 (2) Conservation Law (M)

**6.7 Land Surface Processes and Environmental Change**

This Domain (60 credits) is open only to students in the B.Sc. Major in Environment program.

Adviser: Professor Michel Lapointe  
 email: lapointe@geog.mcgill.ca  
 telephone: (514) 398-4959

The thin soil layer on the planet's land surfaces controls the vital inputs of water, nutrients and energy to terrestrial and freshwater aquatic ecosystems. Widespread occurrences around the globe of desertification, soil erosion, deforestation and land submergence over water reservoirs indicate that this dynamic system is under increasing pressure from population growth and changes in climate and land uses. Production of key green-house gases (water vapor, CO<sub>2</sub> and methane) is controlled by complex processes operating at the land surface, involving climate change feedbacks that need to be fully understood, given current global warming trends. The program introduces students to the interacting physical and biogeochemical processes at the atmosphere-lithosphere interface, which fashion land surface habitats and determine their biological productivity and response to anthropogenic or natural environmental changes. Through an appropriate selection of courses, students can prepare for graduate training in emerging research areas such as earth system sciences, environmental hydrology and landscape ecology.

Course descriptions and prerequisites can be found in the unit's Calendar entry. The most up-to-date information on courses being offered this academic year is provided in the Class Schedule, available on the Web at <http://www.mcgill.ca/minerva-students>. **Courses offered at Macdonald Campus are marked with an (M). (Introductory Core Courses are offered on both campuses.)**

**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.**

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

ENVR 200 (3) The Global Environment  
 ENVR 201 (3) Society and Environment  
 ENVR 202 (3) The Evolving Earth  
 ENVR 203 (3) Knowledge, Ethics and Environment  
 ENVR 400 (3) Environmental Thought  
 ENVR 401\* (3) Environmental Research

\* Students taking ENVR 401 in Sept. 2002 must contact the Program Coordinator prior to registering, email: info.mse@mcgill.ca

**Domain Required Course (3 credits)**

GEOG 203 (3) Environmental Systems

**Domain Complementary Courses (39 credits)**

3 credits of statistics chosen from:

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

3 credits of ecology chosen from:

BIOL 208 (3) Introduction to Ecology  
 or AEBI 205 (3) Principles of Ecology (M)

3 credits of weather and climate chosen from:

ATOC 215 (3) Weather Systems and Climate  
 or AEPH 201 (3) Introductory Meteorology (M)

9 credits of fundamental land surface processes chosen from:

GEOG 272 (3) Earth's Changing Surface  
 or SOIL 200 (3) Introduction to Earth Science (M)  
 GEOG 305 (3) Geography of Soils  
 or SOIL 326 (3) Soil Genesis and Classification (M)  
 GEOG 321 (3) Climatic Environments  
 GEOG 322 (3) Environmental Hydrology  
 or ABEN 217 (3) Hydrology and Drainage (M)

3 credits of environment and resource management chosen from:

AGRI 435	(3)	Soil and Water Quality Management ( <i>M</i> )
AGRI 550	(3)	Sustained Tropical Agriculture (in Panama)
BIOL 465	(3)	Conservation Biology
BIOL 535	(3)	Political Ecology
BIOL 560	(3)	Aquatic Conservation
CHEE 230	(3)	Environmental Aspects of Technology
CIVE 225	(3)	Environmental Engineering
GEOG 302	(3)	Environmental Analysis and Management: Problems and Policy
WILD 437	(3)	Assessing Environmental Impact ( <i>M</i> )
WOOD 420	(3)	Environmental Issues in Forestry ( <i>M</i> )
WOOD 441	(3)	Integrated Forest Management ( <i>M</i> )

3 credits of a field course chosen from:

BIOL 553	(3)	Neotropical Environments (in Panama)
GEOG 495	(3)	Field Studies - Physical Geography (at Mont St. Hilaire)
GEOG 496	(3)	Geographical Excursion (in Barbados)
GEOG 497	(3)	Ecology of Coastal Waters (on Bay of Fundy)
GEOG 499	(3)	Subarctic Field Studies in Geography (in Schefferville)
NRSC 382	(3)	Ecological Monitoring and Analysis ( <i>M</i> )
WILD 475	(3)	Desert Ecology (in Arizona)

3 credits of social science issues chosen from:

ANTH 339	(3)	Ecological Anthropology
ECON 225	(3)	Economics of the Environment
ECON 326	(3)	Ecological Economics
ECON 405	(3)	Natural Resource Economics
or AEBI 333	(3)	Resource Economics ( <i>M</i> )
GEOG 408	(3)	Geography of Development
GEOG 498	(3)	Humans in Tropical Environments (in Panama)
GEOG 508	(3)	Resources, People and Power
SOCI 328	(3)	Environmental Sociology

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

3 credits minimum of advanced study of particular environments:

BIOL 358	(3)	Canadian Flora
or PLNT 358	(3)	Flowering Plant Diversity ( <i>M</i> )
BIOL 432	(3)	Limnology
or ZOO 315	(3)	Science of Inland Waters ( <i>M</i> )
BIOL 526	(3)	Plants and Extreme Environments
GEOG 350	(3)	Ecological Biogeography
GEOG 372	(3)	Running Water Environments
GEOG 470	(3)	Wetlands
GEOG 536	(3)	Geocryology
GEOG 550	(3)	Quaternary Paleoecology
PLNT 460	(3)	Plant Ecology ( <i>M</i> )
WOOD 410	(3)	The Forest Ecosystem ( <i>M</i> )

6 credits minimum of advanced study of surface processes:

ABEN 509	(2)	Hydrologic Systems and Modeling ( <i>M</i> )
ATOC 315	(3)	Water in the Atmosphere
EPSC 401	(3)	Advanced Environmental Geology
EPSC 549	(3)	Hydrogeology
EPSC 580	(3)	Aqueous Geochemistry
GEOG 501	(3)	Modeling Environmental Systems
GEOG 505	(3)	Global Biogeochemistry
GEOG 522	(3)	Advanced Environmental Hydrology
GEOG 537	(3)	Advanced Fluvial Geomorphology
SOIL 331	(3)	Soil Physics ( <i>M</i> )
SOIL 410	(3)	Soil Chemistry ( <i>M</i> )
WILD 333	(3)	Physical and Biological Aspects of Pollution ( <i>M</i> )

## 6.8 Renewable Resource Management Domain

This Domain (60 credits including Core) is open only to students in the B.Sc. Major in Environment program.

Adviser: Professor Benoît Côté,  
email: coteb@nrs.mcgill.ca  
telephone: (514) 398-7952

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 environment; 2) the ways in which ecosystems can be managed to meet specific goals for the provision of goods and services; 3) the economic and social factors that determine how ecosystems are managed; 4) the ways in which management of natural resources can affect the capability of natural ecosystems to continue to supply human needs in perpetuity; and 5) the approaches and technologies required to monitor and analyze the dynamics of natural and managed ecosystems.

Course descriptions and prerequisites can be found in the unit's Calendar entry. The most up-to-date information on courses being offered this academic year is provided in the Class Schedule, available on the Web at <http://www.mcgill.ca/minerva-students>. **Courses offered at Macdonald Campus are marked with an (M). (Introductory Core Courses are offered on both campuses.)**

### Recommended Prerequisite or Corequisite Courses for Domain

(6 credits, minimum)

FDSC 211	(3)	Biochemistry 1 ( <i>M</i> )
or BIOL 112	(3)	Cell and Molecular Biology
or CEGEP equivalent (e.g., CEGEP objective 00XU)		
FDSC 230	(4)	Organic Chemistry ( <i>M</i> )
or CHEM 212	(4)	Introductory Organic Chemistry 1
or CEGEP equivalent (e.g., CEGEP objective 00XV)		

**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 Domain prerequisites or corequisites listed above.**

### Core - Required Courses (18 credits)

ENVR 200	(3)	The Global Environment
ENVR 201	(3)	Society and Environment
ENVR 202	(3)	The Evolving Earth
ENVR 203	(3)	Knowledge, Ethics and Environment
ENVR 400	(3)	Environmental Thought
ENVR 401*	(3)	Environmental Research

\* Students taking ENVR 401 in Sept. 2002 must contact the Program Coordinator prior to registering, email: [info.mse@mcgill.ca](mailto:info.mse@mcgill.ca)

### Domain – Complementary Courses (42 credits)

9 credits of basic principles of ecosystem processes and diversity chosen from:

AEBI 200	(3)	Biology of Organisms 1 ( <i>M</i> )
or BIOL 305	(3)	Diversity of Life
or PLNT 201	(3)	Comparative Plant Biology ( <i>M</i> )
AEBI 205	(3)	Principles of Ecology ( <i>M</i> )
or BIOL 208	(3)	Ecology
SOIL 210	(3)	Principles of Soil Science ( <i>M</i> )
or GEOG 305	(3)	Geography of Soils

6 credits of statistics and GIS methods:

- ABEN 330 (3) GIS for Biosystems Management (*M*)  
or GEOG 201 (3) Introductory Geo-Information Science
- AEMA 310 (3) Statistical Methods 1 (*M*)  
or BIOL 373 (3) Biostatistical Analysis

6 credits of advanced ecosystem components chosen from:

- PLNT 358\* (3) Flowering Plant Diversity (*M*)  
or BIOL 358\* (3) Canadian Flora
- \* PLNT 358 and BIOL 358 are courses with substantially the same content, taught on different campuses. Only one may be taken. See the Calendar listing for these courses for information on the required field component in summer prior to first classes.
- SOIL 326 (3) Soil Genesis and Classification (*M*)
- ZOOL 307 (3) Natural History of the Vertebrates (*M*)

6 credits of advanced courses on ecological processes:

- BIOL 465 (3) Conservation Biology
- GEOG 322 (3) Environmental Hydrology  
or ABEN 217 (3) Hydrology and Drainage (*M*)
- GEOG 372 (3) Running Water Environments
- GEOG 470 (3) Wetlands
- MICR 331 (3) Microbial Ecology (*M*)
- PLNT 460 (3) Plant Ecology (*M*)
- WILD 410 (3) Wildlife Ecology (*M*)
- WOOD 410 (3) The Forest Ecosystem (*M*)
- ZOOL 315 (3) Science of Inland Waters (*M*)  
or BIOL 432 (3) Limnology

6 credits of social processes:

- AGEC 242 (3) Management Theories and Practices (*M*)
- AGEC 333 (3) Resource Economics (*M*)  
or ECON 405 (3) Natural Resource Economics
- ANTH 339 (3) Ecological Anthropology
- RELG 270 (3) Religious Ethics and the Environment
- SOCI 328 (3) Environmental Sociology
- WILD 415 (2) Conservation law (*M*)

9 credits in the management of ecosystems or ecosystem components:

- AGRI 435 (3) Soil and Water Quality Management (*M*)
- BIOL 470 (3) Lake Management
- GEOG 302 (3) Environmental Management 1
- GEOG 404 (3) Environmental Management 2 (in Panama)
- PLNT 300 (3) Cropping Systems (*M*)
- WILD 401 (4) Fisheries and Wildlife Management (*M*)
- WILD 437 (3) Assessing Environmental Impact (*M*)
- WOOD 441 (3) Integrated Forest Management (*M*)

## 6.9 Water Environments and Ecosystems Domain

This Domain (54 credits including Core) is open only to students in the B.Sc. Major in Environment program.

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

Those electing the **biological** stream will concentrate 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.

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** stream. They will acquire, as well, a solid background in the biological processes taking place in water bodies.

Graduates of this Domain are qualified to enter the work force or to pursue advanced studies in fields such as marine biology, geography, physical oceanography and atmospheric science.

## Water Environments and Ecosystems Domain – Physical Stream

This Domain (54 credits) is open only to students in the B.Sc. Major in Environment program.

Adviser: Professor Peter Yau  
email: [yau@rainband.meteo.mcgill.ca](mailto:yau@rainband.meteo.mcgill.ca)  
telephone: (514) 398-3719

Course descriptions and prerequisites can be found in the unit's Calendar entry. The most up-to-date information on courses being offered this academic year is provided in the Class Schedule, available on the Web <http://www.mcgill.ca/minerva-students>.

**Courses offered at Macdonald Campus are marked with an (M). (Introductory Core Courses are offered on both campuses.)**

**Recommended Corequisite Course for Domain** (3 credits)

- MATH 222 (3) Calculus 3  
or CEGEP Mathematics 201-301 or equivalent

**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 Domain prerequisites or corequisites listed above.**

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

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

\* Students taking ENVR 401 in Sept. 2002 must contact the Program Coordinator prior to registering, email: [info.mse@mcgill.ca](mailto:info.mse@mcgill.ca)

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

- ATOC 220 (3) Introduction to Oceanic Sciences
- ATOC 315 (3) Water in the Atmosphere
- GEOG 372 (3) Running Water Environments

**Domain – Complementary Courses** (27 credits)

6 credits chosen from:

- BIOL 208 (3) Ecology  
or AEBI 205 (3) Principles of Ecology (*M*)
- GEOG 322 (3) Environmental Hydrology  
or ABEN 217 (3) Hydrology and Drainage (*M*)

3 credits chosen from the following:

- AEMA 202 (3) Calculus (*M*)
- AEMA 310 (3) Statistical Methods 1 (or equivalent) (*M*)
- MATH 203 (3) Principles of Statistics 1
- MATH 222 (3) Calculus 3

12 credits chosen from the following:

- ABEN 416 (3) Engineering for Land Development (*M*)
- AEPH 510 (3) Agricultural Micrometeorology (*M*)
- AGRI 435 (3) Soil and Water Quality Management (*M*)
- ATOC 215 (3) Weather Systems and Climate
- ATOC 308 (3) Principles of Remote Sensing  
or GEOG 308
- ATOC 402 (3) Atmosphere-Ocean Transports
- ATOC 414 (3) Applications of Remote Sensing
- ATOC 568 (3) Ocean Physics
- CIVE 323 (3) Hydrology and Water Resources
- EPSC 549 (3) Hydrogeology
- GEOG 201 (3) Introductory Geo-Information Science
- GEOG 306 (3) Raster Geo-Information Science  
or ABEN 330 (3) GIS for Biosystems Management (*M*)
- GEOG 522 (3) Advanced Environmental Hydrology  
or ABEN 506 (3) Advances in Drainage Management (*M*)  
or ABEN 509 (3) Hydrologic Systems and Modelling (*M*)
- GEOG 537 (3) Advanced Fluvial Geomorphology
- MATH 315 (3) Ordinary Differential Equations  
or AEMA 205 (4) Differential Equations (*M*)

- SOIL 210 (3) Principles of Soil Science (*M*)  
or GEOG 305 (3) Geography of Soils
- 6 credits chosen from the following:
- BIOL 441 (3) Biological Oceanography  
or BIOL 432 (3) Limnology  
or ZOOL 315 (3) Science of Inland Waters (*M*)
- BIOL 473 (3) Ecology of Aquatic Invertebrates
- BIOL 542 (3) Marine Biology
- BIOL 560 (3) Aquatic Conservation
- GEOG 350 (3) Ecological Biogeography
- GEOG 505 (3) Global Biogeochemistry
- WILD 401 (4) Fisheries and Wildlife Management (*M*)

### Water Environments and Ecosystems Domain – Biological Stream

This Domain (54 credits) is open only to students in the B.Sc. Major in Environment program.

Adviser: Mr. Pete Barry, MSE Program Coordinator  
email: info.mse@mcgill.ca  
telephone: (514) 398-4306

**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.**

#### Core – Required Courses (18 credits)

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

\* Students taking ENVR 401 in Sept. 2002 must contact the Program Coordinator prior to registering, email: info.mse@mcgill.ca

#### Domain – Required Course (3 credits)

- ATOC 220 (3) Introduction to Oceanic Sciences

#### Domain – Complementary Courses (33 credits)

6 credits chosen from:

- BIOL 208 (3) Ecology  
or AEBI 205 (3) Principles of Ecology (*M*)
- GEOG 322 (3) Environmental Hydrology  
or ABEN 217 (3) Hydrology and Drainage (*M*)

3 credits chosen from the following:

- AEMA 202 (3) Calculus (*M*)
- AEMA 310 (3) Statistical Methods 1 (or equivalent) (*M*)
- MATH 203 (3) Principles of Statistics 1
- MATH 222 (3) Calculus 3

3 credits chosen from the following:

- BIOL 331 (3) Ecology/Behaviour Field Course  
(at Mont St. Hilaire)
- or GEOG 497 (3) Ecology of Coastal Waters  
(on Bay of Fundy)
- or equivalent aquatic field course

18 credits, minimum, from Lists A and B below –

List A, 9 to 12 credits chosen from:

- AGRI 435 (3) Soil and Water Quality Management (*M*)
- BIOL 441 (3) Biological Oceanography
- BIOL 432 (3) Limnology
- BIOL 542 (3) Marine Biology
- BIOL 560 (3) Aquatic Conservation
- BIOL 570 (3) Advanced Seminar in Evolution
- GEOG 305 (3) Geography of Soils  
or SOIL 210 (3) Principles of Soil Science (*M*)
- GEOG 350 (3) Ecological Biogeography
- ENTO 535 (3) Aquatic Entomology (*M*)
- MICR 331 (3) Microbial Ecology (*M*)
- PARA 410 (3) Environment and Infection (*M*)

- WILD 333 (3) Physical and Biological Aspects of Pollution (*M*)
- WILD 401 (4) Fisheries and Wildlife Management (*M*)
- ZOOL 315 (3) Science of Inland Waters (*M*)

List B, 6 to 10 credits chosen from:

- ABEN 330 (3) GIS for Biosystems Management (*M*)
- ATOC 215 (3) Weather Systems and Climate
- ATOC 308 (3) Principles of Remote Sensing  
or GEOG 308
- ATOC 310 (3) Physical Oceanography
- ATOC 330 (3) Physical Meteorology
- CHEM 219 (3) Intro to Atmospheric Chemistry  
or ATOC 219
- CHEM 257D1 (2) Introductory Analytical Chemistry
- CHEM 257D2 (2) Introductory Analytical Chemistry
- CHEM 419 (3) Adv. in Chem. of Atmosphere  
or ATOC 419
- EPSC 220 (3) Principles of Geochemistry
- GEOG 201 (3) Introductory Geo-Information Science
- GEOG 372 (3) Running Water Environments
- GEOG 522 (3) Advanced Environmental Hydrology
- GEOG 537 (3) Advanced Fluvial Geomorphology
- GEOG 550 (3) Quaternary Paleoecology

3 credits chosen from the following list:

- AGEC 333 (3) Resource Economics (*M*)
- ANTH 339 (3) Ecological Anthropology
- ANTH 418 (3) Environment and Development
- ECON 225 (3) Economics of the Environment
- ECON 326 (3) Ecological Economics
- POLI 345 (3) International Organization
- POLI 466 (3) Public Policy Analysis

## 7 Diploma In Environment

Adviser: Mr. Pete Barry, MSE Program Coordinator  
email: info@mse.mcgill.ca  
telephone: (514) 398-4306

The Diploma is designed for students with an undergraduate degree who wish to enrich or reorient their training, supplementing their specialization with additional undergraduate level course work. The Diploma requires 30 credits of full-time or part-time studies at McGill; it may be started in either January or September. The Diploma is a one-year program if taken full-time.

Students holding a B.Sc. or a B.A. degree or equivalent in good standing, will be permitted to register for the Diploma through the Faculty of Agricultural and Environmental Sciences, the Faculty of Arts, or the Faculty of Science, provided they are otherwise acceptable for admission to the University.

Students must have a **grade of C or higher** in all courses for the Diploma.

### DIPLOMA IN ENVIRONMENT (30 credits)

#### Required Courses (18 credits)

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

\* Students taking ENVR 401 in Sept. 2002 must contact the Program Coordinator prior to registering, email: info.mse@mcgill.ca

#### Complementary Courses (12 credits)

12 credits selected from the Thematic Categories:

6 credits must be taken within the thematic area outside the area of the student's previous degree (e.g., those with a B.A. or equivalent degree must take 6 credits from the Natural Sciences and Technology list; those with a B.Sc. or equivalent degree must take 6 credits from the Social Sciences and Policy list.)

6 credits must be taken at the 400 level or higher in the thematic area of the student's previous degree (e.g., those with a B.A. or equivalent degree must take 6 credits at the 400 level or higher in Social Sciences and Policy; those with a B.Sc. or equivalent degree must take 6 credits at the 400 level or higher in Natural Sciences and Technology.)

## 8 Field Studies

### 8.1 Panama Field Study Semester

This program is a joint venture between McGill University and the Smithsonian Tropical Research Institute (STRI) in Panama.

**Prerequisites:** Spanish Language Elementary HISP 218, or equivalent proficiency, and Principles of Statistics 1 MATH 203, or equivalent. A GPA of 3.00 and higher is recommended. The program is aimed at 400-level students in their final year.

#### Offered in the Winter Term

There is a one week transition and 12 weeks of course attendance in Panama. Field trips will be integrated into each of the courses offered.

The lecture courses will each consist of contact-hours organized over a four-week period, as follows:

- two weeks of lectures, 6 hours per day;
- one week of seminars, 3 hours per day; and
- one week in the field or laboratory, 8 hours per day.

#### Panama Field Study Semester – offered Winter Term (15 credits)

##### Required Courses (9 credits)

- BIOL 553 (3) Neotropical Environments
- ENVR 451 (6) Research in Panama

##### Complementary Courses (6 credits)

One of the following sets:

Offered in Winter 2003 –

- GEOG 404 (3) Environmental Management 2
- SOCI 565 (3) Social Change in Panama

Offered in Winter 2004 –

- AGRI 550 (3) Sustained Tropical Agriculture
- GEOG 498 (3) Humans in Tropical Environments

Hands-on experience is gained through a research project organized around multidisciplinary environmental issues. The nature of these projects will center on practical environmental problems/questions important for Panama. Students will form a team that will work with Panamanian institutions (NGO, governmental or research).

The independent study will have two requirements: attendance at STRI seminar series and at a weekly group discussion. The STRI's seminar series will expose the students to state of the art tropical ecology and involve them in current issues. The weekly discussions will enable student and professors to share experiences and will provide continuity during the term.

Enrolment of McGill students is limited to 26 students. In addition to the regular McGill fees, the cost is approximately \$5500CDN (excluding food, tuition and insurance).

For the year 2003, students are to submit, by March 15, 2002, a letter of intent, CV, and copy of their transcript to Susan Gabe, Biology Undergraduate Office (W4/8, Stewart Biology Building, Downtown Campus, telephone (514) 398-7045.

See the MSE website for more information.

### 8.2 Bay of Fundy Field Study Semester

The focus of this program is environmental and social change on the Bay of Fundy, situated between southern New Brunswick and western Nova Scotia. Aimed at final-year students with a GPA of at least 3.00, the program is based at the Huntsman Marine Science Centre in Saint Andrews, New Brunswick.

Students will take three intensive courses followed by a research project related to regional environmental issues. Courses will cover the ecology of the coastal environments which provide important resources; the historical context of current social, political, economic and environmental issues in Atlantic Canada; and how development of new technologies for resource exploitation and globalization of local economies are having dramatic impacts on small coastal communities. Each course will rely heavily on field work and interaction with local experts and stakeholders. Student research projects will be arranged with Federal, Provincial and non-governmental agencies.

In addition to the regular McGill fees, the field semester fee is approximately \$4,700, including food and lodging at the Huntsman Marine Science Centre as well as field trips. Travel to St. Andrews, New Brunswick, is **not** included.

See the MSE website or the Geography Department website at <http://www.geog.mcgill.ca/fieldsemester.html> for more information on this program.

#### Bay of Fundy Field Study Semester – offered Fall Term

##### Required Courses (15 credits)

- CANS 407 (3) Understanding Atlantic Canada
- ENVR 465 (3) Environment and Social Change
- ENVR 466 (6) Research in Atlantic Canada
- GEOG 497 (3) Ecology of Coastal Waters

### 8.3 Macdonald Campus Summer Field Study Human Impacts on the Environment

Courses are available during Summer Session that provide students the opportunity to participate in supervised field research concerning flora and fauna not easily studied at other times of the year, and to apply knowledge from the classroom to environmental issues in the field. Common thematic elements include: the linkages between physical, biological and human systems, field research, and human impacts on the environment. Students learn and apply research techniques and analytical skills within a multi-disciplinary, holistic approach.

For more information, see the Faculty of Agricultural and Environmental Sciences section, [page 467](#), or website <http://www.mcgill.ca/macdonald/programs/applied/> or the *2002 Summer Studies Calendar* or website <http://www.mcgill.ca/Summer/>

## 9 List of approved Thematic Category Courses for the Minor and the Diploma

#### Notes:

1. This list is not meant to be exclusive. Courses not on the list may be included in the Minor or Diploma with the permission of the MSE Program Coordinator.
2. Most courses listed at the 300 level and higher have prerequisites. Although instructors may waive prerequisites in some cases, **students are urged to prepare their program of study well before their final year.**
3. Not all courses are available in any given year. The most up-to-date information on courses being offered this academic year is provided in the Class Schedule, available on the Web at <http://www.mcgill.ca/minerva-students>. Course descriptions and prerequisites can also be found in the unit's Calendar entry.

#### SOCIAL SCIENCES AND POLICY

##### Anthropology

- ANTH 206 (3) Environment and Culture
- ANTH 212 (3) Anthropology of Development
- ANTH 339 (3) Ecological Anthropology

##### Economics

- 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



**Environment**

- ENVR 201 (3) Society and Environment  
 ENVR 203 (3) Knowledge, Ethics and Environment  
 ENVR 400 (3) Environmental Thought

**Geography**

- GEOG 200 (3) Geographical Perspectives: World Environmental Problems  
 GEOG 216 (3) Geography of the World Economy  
 GEOG 300 (3) Human Ecology in Geography  
 GEOG 301 (3) Geography of Nunavut  
 GEOG 302 (3) Environmental Management 1  
 GEOG 410 (3) Geography of Underdevelopment: Current Problems

**Law**

Students must complete the Special Student application form at the Faculty of Law, and must also provide the Law Faculty with a C.V., a transcript, and a letter stating why they want to take the course. Students should also speak with the professor of the course in question.

- CMPL 508 (2) Research Seminars (Several are available, check the Law Calendar for details.)

- CMPL 580 (3) Environment and the Law

**Philosophy**

- PHIL 230 (3) Introduction to Moral Philosophy 1  
 PHIL 237 (3) Contemporary Moral Issues  
 PHIL 334 (3) Ethics 1

**Political Science**

- POLI 211 (3) Introduction to Comparative Politics  
 POLI 212 (3) Government and Politics of the Developed World  
 POLI 227 (3) Developing Areas/Introduction  
 POLI 345 (3) International Organization  
 POLI 445 (3) IPE: North-South Relations

**Psychology**

- PSYC 215 (3) Social Psychology

**Religious Studies**

- RELG 270 (3) Religious Ethics and the Environment  
 RELG 370 (3) Justice, Human Rights and Religion  
 RELG 376 (3) Religious Ethics

**Sociology**

- SOCI 234 (3) Population and Society  
 SOCI 235 (3) Technology and Society  
 SOCI 254 (3) Development and Underdevelopment  
 SOCI 328 (3) Environmental Sociology  
 SOCI 366 (3) Social Change in the Caribbean

**Agricultural Economics (Macdonald Campus)**

- AGEC 231 (3) Economic Systems of Agriculture  
 AGECE 333 (3) Resource Economics  
 AGECE 430 (3) Agriculture, Food and Resource Policy

**Religious Studies (Macdonald Campus)**

- RELG 270 (3) Religious Ethics and the Environment

**Renewable Resources (Macdonald Campus)**

- WILD 415 (2) Conservation Law

**NATURAL SCIENCES AND TECHNOLOGY****Architecture**

- ARCH 375 (2) Landscape  
 ARCH 377 (2) Energy, Environment and Buildings  
 ARCH 378 (3) Site Usage

**Atmospheric and Oceanic Sciences**

- ATOC 210 (3) Introduction to Atmospheric Science  
 ATOC 215 (3) Weather Systems and Climate  
 ATOC 220 (3) Introduction to Oceanic Sciences

**Biology**

- BIOL 208 (3) Ecology  
 BIOL 305 (3) Diversity of Life  
 BIOL 365 (3) Conservation Biology  
 BIOL 432 (3) Limnology  
 BIOL 473 (3) Ecology of Aquatic Invertebrates

**Chemistry**

- CHEM 201 (3) Modern Inorganic Chemistry 1

- CHEM 212 (4) Introductory Organic Chemistry 1

- CHEM 301 (3) Modern Inorganic Chemistry 2

- CHEM 307 (3) Environmental Analysis

- CHEM 350 (3) Earth, Fire, Air and Water

**Chemical Engineering**

- CHEE 230 (3) Environmental Aspects of Technology

- CHEE 471 (3) Industrial Water Pollution Control

- CHEE 472 (3) Industrial Air Pollution Control

**Civil Engineering**

- CIVE 225 (4) Environmental Engineering

- CIVE 323 (3) Hydrology and Water Resources

- CIVE 526 (3) Solid Waste Management

- CIVE 550 (3) Water Resources Management

- CIVE 553 (3) Stream Pollution and Control

- CIVE 555 (3) Environmental Data Analysis

**Computer Science**

- COMP 102 (3) Computers and Computing (Arts students only)

- COMP 202 (3) Introduction to Computing 1

- COMP 203 (3) Introduction to Computing 2

**Earth and Planetary Sciences**

- EPSC 233 (3) Earth and Life History

- EPSC 243 (3) Environmental Geology

- EPSC 425 (3) Depositional Environments & Sequence Stratigraphy

**Environment**

- ENVR 200 (3) The Global Environment

- ENVR 202 (3) The Evolving Earth

**Geography**

- 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 322 (3) Environmental Hydrology

**Mechanical Engineering**

- MECH 343 (3) Energy Conversion

- MECH 534 (3) Air Pollution Engineering

**Microbiology and Immunology**

- MIMM 211 (3) Biology of Microorganisms

- MIMM 314 (3) Immunology

- MIMM 323 (3) Microbial Physiology and Genetics

- MIMM 324 (3) Fundamental Virology

**Mining, Metals and Materials Engineering**

- MIME 308 (3) Social and Economic Impacts of Technology

- MIME 320 (3) Extraction of Energy Resources

- MIME 451 (3) Environmental Controls

- MIME 555 (3) Thermal Remediation of Wastes

**Physics**

- PHYS 248 (3) Physics of Energy

**Psychology**

- PSYC 431 (3) Environment and the Developing Brain

**Agricultural and Biosystems Engineering****(Macdonald Campus)**

- AGRI 435 (3) Soil and Water Quality Management

- ABEN 217 (3) Hydrology and Drainage

- ABEN 322 (3) Agro-Food Waste Management

- ABEN 518 (3) Pollution Control for Agriculture

**Biology (Macdonald Campus)**

- AEBI 205 (3) Principles of Ecology

- AEBI 495 (3) Environmental Biology Seminar

**Microbiology (Macdonald Campus)**

- MICR 331 (3) Microbial Ecology

**Physics (Macdonald Campus)**

- AEPH 201 (3) Introductory Meteorology

**Plant Science (Macdonald Campus)**

- PLNT 304 (3) Biology of Fungi

- PLNT 305 (3) Plant Pathology

- PLNT 358 (3) Flowering Plant Diversity

- PLNT 460 (3) Plant Ecology

**Renewable Resources (Macdonald Campus)**

- WILD 333 (3) Physical and Biological Aspects of Pollution
- WILD 375 (3) Issues in Environmental Sciences
- WILD 410 (3) Wildlife Ecology
- WILD 437 (3) Assessing Environmental Impact
- Soil Science (Macdonald Campus)**
- SOIL 200 (3) Introduction to Earth Science
- Zoology (Macdonald Campus)**
- ZOOL 315 (3) Science of Inland Waters

**10 Courses**

**Please note: courses may have been rescheduled or new courses added after this Calendar went to press. Students preparing to register are advised to consult the 2002-2003 Class Schedule on the Web, <http://www.mcgill.ca/minerva-students> for the most up-to-date information.**

**The Class Schedule includes the term(s), days, and times when courses will be offered, as well as class locations and names of instructors. MSE courses are team-taught by faculty spanning a range of disciplines and perspectives.**

**The schedule of courses to be offered in Summer 2003 will be available on the website in January.**

The course credit weight is given in parentheses after the title. Term(s) offered (Fall, Winter, Summer) may appear after the credit weight to indicate when a course would normally be taught. Please check the Class Schedule to confirm this information.

**NOTE:** ENVR has replaced 170- as the prefix for MSE courses.

**All courses have limited enrolment.**

● Denotes courses not offered in 2002-03.

★ Denotes courses offered only in alternate years.

**ENVR 200 THE GLOBAL ENVIRONMENT.** (3) (Fall) (Section 01: Downtown Campus) (Section 51: Macdonald Campus) A systems approach to study the different components of the environment involved in global climate change: the atmosphere, biosphere, hydrosphere, and lithosphere. The interactions among these components. Their role in global climate change. The human dimension to global change.

**ENVR 201 SOCIETY AND ENVIRONMENT.** (3) (Fall) (Section 01: Downtown Campus) (Section 51: Macdonald campus) An introduction to human societies and their relations with the biophysical environment, focusing on how economy, technology, and institutions interact to give rise to environmental problems. Analytical treatment of key concepts from distinct disciplinary perspectives in the social and life sciences, including "carrying capacity", "renewable resources", "environmental equity", and "sustainability".

**ENVR 202 THE EVOLVING EARTH.** (3) (Winter) (Section 01: Downtown Campus) (Section 51: Macdonald Campus) Formation of the Earth and the evolution of life. How geological and biological change are the consequence of history, chance, and necessity acting over different scales of space and time. General principles governing the formation of modern landscapes and biotas. Effects of human activities on natural systems.

**ENVR 203 KNOWLEDGE, ETHICS AND ENVIRONMENT.** (3) (Fall - Macdonald Campus; Winter - Downtown) (Section 01: Downtown Campus) (Section 51: Macdonald Campus) Introduction to cultural perspectives on the environment: the influence of culture and cognition on perceptions of the natural world; conflicts in orders of knowledge (models, taxonomies, paradigms, theories, cosmologies), ethics (moral values, frameworks, dilemmas), and law (formal and customary, rights and obligations) regarding political dimensions of critical environments, resource use, and technologies.

**ENVR 380 TOPICS IN ENVIRONMENT 1.** (3) (Normally open only to students who have completed MSE U1 core courses) Lectures and discussion of interdisciplinary aspects of current problems in

environment led by staff and/or special guests. This course is offered on an irregular basis.

**ENVR 400 ENVIRONMENTAL THOUGHT.** (3) (Fall and Winter) (Downtown Campus only) Students work in interdisciplinary seminar groups on challenging philosophical, ethical, scientific and practical issues. They will explore cutting-edge ideas and grapple with the reconciliation of environmental imperatives and social, political and economic pragmatics. Activities include meeting practitioners, attending guest lectures, following directed readings, and organizing, leading and participating in seminars.

**ENVR 401 ENVIRONMENTAL RESEARCH.** (3) (Fall) (Restricted to students in the B.A., B.Sc. and Diploma in Environment programs. Corequisite: ENVR 400) (Downtown Campus only) Students work in an interdisciplinary team on a real-world research project involving problem definition, methodology development, social, ethical and environmental impact assessment, execution of the study, and dissemination of results to the research community and to the people affected. Teams begin defining their projects during the preceding spring. **Note: students taking ENVR 401 in September 2002 must contact the Program Coordinator prior to registering. Email: [info.mse@mcgill.ca](mailto:info.mse@mcgill.ca).**

**ENVR 451 RESEARCH IN PANAMA.** (6) (Restricted to students in the Panama Field Semester program. Offered in Panama only) Research projects will be developed by instructors in consultation with Panamanian universities, government agencies and non-governmental organizations. Project groups will consist of four to six students working with a Panamanian institution. Topics will be relevant to Panama: e.g., protection of the Canal watershed, economical alternatives to deforestation, etc.

**ENVR 465 ENVIRONMENT AND SOCIAL CHANGE.** (3) (Students must enroll in Bay of Fundy Field Semester. Offered on Bay of Fundy only.) (Prerequisites: ENVR 201, ENVR 203 and ENVR 202 or permission of instructor) (Corequisites: GEOG 497 and CANS 407 and ENVR 466) Impacts of globalization upon coastal and resource-based communities in terms of relationships between the environment, new technologies and global market. Emphasis is on the complexity of change and the conflicts and compromises inevitable in global-local interactions.

**ENVR 466 RESEARCH IN ATLANTIC CANADA.** (6) (Restricted to students in Bay of Fundy Field Semester. Offered on Bay of Fundy only.) (Corequisites: GEOG 497 and CANS 407 and ENVR 465) Students will work in teams on research topics relevant to sustainability of regional environments, economies and cultures, such as aquaculture, forestry, traditional fisheries, water quality, and ecotourism.

**ENVR 480 TOPICS IN ENVIRONMENT 2.** (3) (Normally open only to U3 MSE students) Intermediate-level seminars and discussion of interdisciplinary aspects of current problems in environment led by staff and/or special guests. This course is offered on an irregular basis.

**ENVR 485 READINGS IN ENVIRONMENT 1.** (3) (Normally open only to U3 MSE students) Interdisciplinary literature project/essays related to environment, enabling independent study under guidance of qualified MSE staff in areas outside the scope of individual departments. Proposed topic and method of evaluation must be approved by the Associate Director one month before the beginning of term. Contact the Program Coordinator for information.

**ENVR 580 TOPICS IN ENVIRONMENT 3.** (3) (Prerequisite: Permission of instructor) Advanced-level seminars and discussion of interdisciplinary aspects of current problems in environment led by staff and/or special guests. This course is offered on an irregular basis.

**ENVR 585 READINGS IN ENVIRONMENT 2.** (3) (Prerequisites: ENVR 400 and ENVR 401, or permission of instructor) Interdisciplinary literature project/essays related to environment, enabling advanced-level study under guidance of qualified MSE staff in areas outside the scope of individual departments. Proposed topic and method of evaluation must be approved by the Associate Director one month before the beginning of term. Contact the Program Coordinator for information.