McGill School of Environment

Programs, Courses and University Regulations

2010-2011

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1 About the McGill School of Environment

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

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

2 Mission of the School

The mission of the McGill School of Environment is:

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

3 About the School (Undergraduate)

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

3.1 Location

For advising, contact:

Program Advisor, Ms. Kathy Roulet
Telephone: 514-398-4306
Fax: 514-398-1643
Email: *kathy.roulet@mcgill.ca*

Website: *www.mcgill.ca/mse*

Downtown Campus
3534 University Street
Montreal, Quebec H3A 2A7
Telephone: 514-398-2827
Fax: 514-398-1643

Macdonald Campus
Rowles House
21,111 Lakeshore Road
Sainte-Anne-de-Bellevue, Quebec H9X 3V9
Telephone: 514-398-7559
Fax: 514-398-7846

3.2 Administrative Officers

Chandra Madramootoo; B.Sc.(Agr.Eng.), M.Sc., Ph.D.(McG.)	**Dean, Faculty of Agricultural and Environmental Sciences**
Christopher Manfredi; B.A.(Calg.), M.A., Ph.D.(Claremont)	**Dean, Faculty of Arts**
Martin Grant; B.Sc.(PEI), M.Sc., Ph.D.(Tor.)	**Dean, Faculty of Science**
Marilyn Scott; B.Sc.(New Br.), Ph.D.(McG.)	**Director**
Madhav Badami; B.Tech., M.Sc.(IIT), M.E.Des.(Calg.), Ph.D.(Br. Col.)	**Associate Director, Graduate Affairs**
George McCourt; B.Sc., M.Sc.(Alta.), M.Sc.(McG.)	**Associate Director, Undergraduate Affairs**
Anthony Ricciardi; B.Sc.(Agr.), M.Sc., Ph.D.(McG.)	**Associate Director, Research**
Kathryn Roulet; B.Sc.(Trent), M.Sc.(Guelph)	**Program Advisor**

3.3 Academic Staff

Professors

Peter G. Brown; B.A.(Haver.), M.A., Ph.D.(Col.) (*joint appoint. with Geography and Natural Resource Sciences*)

Colin Chapman; B.Sc., M.A., Ph.D.(Alta.) (*joint appoint. with Anthropology*)

Associate Professors

Madhav Badami; B.Tech., M.Sc.(IIT), M.E.Des.(Calg.), Ph.D.(Br. Col.) (*joint appoint. with School of Urban Planning*)

Sylvie de Blois; B.Sc.(Agr.)(McG.), M.Sc., Ph.D.(Montr.) (*joint appoint. with Plant Science*)

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

Gregory Mikkelson; B.A.(Trinity), M.S., Ph.D.(Chic.) (*joint appoint. with Philosophy*)

Anthony Ricciardi; B.Sc.(Agr.), M.Sc., Ph.D.(McG.) (*joint appoint. with Redpath Museum*)

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

Assistant Professors

Elena Bennett; B.A.(Oberlin), M.Sc., Ph.D.(Wis.) (*joint appoint. with Natural Resource Sciences*)

Jaye Ellis; B.A.(Calg.), LL.B., B.C.L.(McG.), LL.M.(Br. Col.) (*joint appoint. with Law*)

Iwao Hirose; Ph.D.(St. And.) (*joint appoint. with Philosophy*)

Brian Leung; B.Sc.(Br. Col.), Ph.D.(Car.) (*joint appoint. with Biology*)

Jeanine Rhemtulla; B.Sc.(McG.), M.Sc.(Alta.), Ph.D.(Wis.)

Raja Sengupta; B.Sc.(Bombay), M.Sc.(IIT), Ph.D.(S. Illinois) (*joint appoint. with Geography*)

Ismael Vaccaro; B.A.(Barcelona), D.E.A.(Paris), M.A., Ph.D.(Wash.) (*joint appoint. with Anthropology*)

Faculty Lecturers

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

Joan Marshall; B.A.(McG.), M.A.(Tor.), Ph.D.(McG.)

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

Associate Members

Animal Science: Sarah Kimmins

Anthropology: Andre Costopoulos, John Galaty

Atmospheric and Oceanic Sciences: Parisa Ariya

Associate Members

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

Bioresource Engineering: Jan Adamowski, Suzelle Barrington, Grant Clark, Robert Kok, Chandra Madramootoo

Chemical Engineering: Nathalie Tufenkji, Viviane Yargeau

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

Dietetics and Human Nutrition, School of: Tim Johns

Earth and Planetary Sciences: Jeanne Paquette

Economics: Robert Cairns, Chris Green, Tom Naylor

Electrical and Computer Engineering: Geza Joos

Epidemiology and Biostatistics: Mark Goldber

4.2 Degree Requirements

To be eligible for a B.A. degree, you must fulfil all the faculty and program requirements as indicated in *Faculty of Arts > Faculty of Arts Degrees*.

To be eligible for a B.A. & Sc. degree, you must fulfil all the faculty and program requirements as indicated in *Bachelor of Arts and Science > Degree Requirements*.

To be eligible for a B.Sc.(Ag.Env.Sc.) degree, you must fulfil all the faculty and program requirements as indicated in *Faculty of Agricultural and Environmental Sciences*

These regulations are **not identical**:

- Arts students, see *Faculty of Arts > Courses Outside the Faculties of Arts and Science*.
- Arts and Science students, see *Bachelor of Arts and Science > Courses Outside the Faculties of Arts and Science*.
- Science students, see *Faculty of Science > Courses Outside the Faculties of Arts and Science*.
- Agricultural and Environmental Sciences students, see *Faculty of Agricultural and Environmental Sciences > Minimum Credit Requirement*.
- Faculty of Science students F1 8.1 Tf1 0 0 1 81.e004

- submit their program of courses already taken and to be taken for the Minor in Environment to the MSE Program Advisor for approval **(only courses at the 200-level and above will be approved)**;
- pass all courses counted towards the Minor with **a grade of C or higher**;
- complete 18 credits from the courses listed under *section 7.1: Bachelor of Arts (B.A.) - Minor Concentration Environment (18 credits)* or *section 7.2: Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) or Bachelor of Science (B.Sc.) - Minor Environment (18 credits)* in this publication and which are not otherwise counted towards the student's Major program or concentration or a second Minor program; and
- ensure that all 18 credits are taken outside the discipline or field of the student's Major program or concentration.

7.1 Bachelor of Arts (B.A.) - Minor Concentration Environment (18 credits)

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

Advising Note:

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

For more information please contact:

Ms. Kathy Roulet, MSE Program Advisor

E-mail: (kathy.roulet@mcgill.ca)

Telephone: 514-398-4306

Complementary Courses (18 credits)

18 credits of Complementary Courses are selected as follows:

12 credits of MSE core courses:

Location Note: Core courses are taught at both McGill's downtown campus and at the Macdonald campus in Ste.

AGEC 430	(3)	Agriculture, Food and Resource Policy
AGEC 442	(3)	Economics of International Agricultural Development
AGRI 210	(3)	Agro-Ecological History
AGRI 411	(3)	Global Issues on Development, Food and Agriculture
ANTH 206	(3)	Environment and Culture
ANTH 212	(3)	Anthropology of Development
ANTH 339	(3)	Ecological Anthropology
ANTH 512	(3)	Political Ecology
CIVE 433	(3)	Urban Planning
ECON 205	(3)	An Introduction to Political Economy
ECON 225	(3)	Economics of the Environment
ECON 326	(3)	Ecological Economics
ECON 347	(3)	Economics of Climate Change
ECON 405	(3)	Natural Resource Economics
ENVR 201	(3)	Society and Environment
ENVR 203	(3)	Knowledge, Ethics and Environment
ENVR 400	(3)	Environmental Thought
GEOG 200	(3)	Geographical Perspectives: World Environmental Problems
GEOG 210	(3)	Global Places and Peoples
GEOG 216	(3)	Geography of the World Economy
GEOG 221	(3)	Environment and Health
GEOG 300	(3)	Human Ecology in Geography

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GeOG 300

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POLI 211	(3)	Comparative Government and Politics
POLI 212	(3)	Government and Politics - Developed World
POLI 227	(3)	Developing Areas/Introduction
POLI 345	(3)	International Organizations
POLI 445	(3)	International Political Economy: Monetary Relations
POLI 466	(3)	Public Policy Analysis
PSYC 215	(3)	Social Psychology
RELG 270	(3)	Religious Ethics and the Environment
RELG 340	(3)	Religion and the Sciences
RELG 370	(3)	Religion and Human Rights
RELG 376	(3)	Religious Ethics
SOCI 222	(3)	Urban Sociology
SOCI 234	(3)	Population and Society
SOCI 235	(3)	Technology and Society
SOCI 254	(3)	Development and Underdevelopment
SOCI 386	(3)	Contemporary Social Movements
URBP 201	(3)	Planning the 21st Century City
URBP 506	(3)	Environmental Policy and Planning
URBP 530	(3)	Urban Environmental Planning
WILD 415*	(2)	Conservation Law

Natural Sciences and Technology

** Note: you may take MIMM 211 or LSCI 230 but not both; you may take ENVB 315 or BIOL 432 but not both.

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

BTEC 502	(3)	Biotechnology Ethics and Society
CHEE 230	(3)	Environmental Aspects of Technology
CHEE 430	(3)	Technology Impact Assessment
CHEM 212	(4)	Introductory Organic Chemistry 1
CHEM 281	(3)	Inorganic Chemistry 1
CHEM 462	(3)	Green Chemistry
CIVE 225	(4)	Environmental Engineering
CIVE 323	(3)	Hydrology and Water Resources
CIVE 550	(3)	Water Resources Management
ENTO 340	(3)	Field Entomology
ENVB 210	(3)	The Biophysical Environment
ENVB 301	(3)	Meteorology
ENVB 305	(3)	Population & Community Ecology
ENVB 315**	(3)	Science of Inland Waters
ENVB 410	(3)	Ecosystem Ecology
ENVB 415	(3)	Ecosystem Management
ENVR 200	(3)	The Global Environment
ENVR 202	(3)	The Evolving Earth
EPSC 201	(3)	Understanding Planet Earth
EPSC 233	(3)	Earth and Life History
EPSC 425	(3)	Sediments to Sequences
EPSC 549	(3)	Hydrogeology
ESYS 301	(3)	Earth System Modelling
GEOG 200	(3)	Geographical Perspectives: World Environmental Problems
GEOG 201	(3)	Introductory Geo-Information Science
GEOG 205	(3)	Global Change: Past, Present and Future
GEOG 272	(3)	Earth's Changing Surface
GEOG 308	(3)	Principles of Remote Sensing
GEOG 321	(3)	Climatic Environments
GEOG 322	(3)	Environmental Hydrology
GEOG 372	(3)	Running Water Environments
GEOG 470	(3)	Wetlands
LSCI 230**	(3)	Introductory Microbiology
MICR 331	(3)	Microbial Ecology
MIME 308	(3)	Social Impact of Technology
MIME 320	(3)	Extraction of Energy Resources
MIMM 211**	(3)	Introductory Microbiology
MIMM 314	(3)	Immunology
MIMM 323	(3)	Microbial Physiology
MIMM 324	(3)	Fundamental Virology
NRSC 333	(3)	Pollution and Bioremediation
NRSC 340	(3)	Global Perspectives on Food
NRSC 384	(3)	Field Research Project

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

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

Location Note:

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

Social Sciences and Policy

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

AGEC 231	(3)	Economic Systems of Agriculture
AGEC 333	(3)	Resource Economics
AGEC 430	(3)	Agriculture, Food and Resource Policy
AGEC 442	(3)	Economics of International Agricultural Development
AGRI 210	(3)	Agro-Ecological History
AGRI 411	(3)	Global Issues on Development, Food and Agriculture
ANTH 206	(3)	Environment and Culture
ANTH 212	(3)	Anthropology of Development
ANTH 339	(3)	Ecological Anthropology
ANTH 512	(3)	Political Ecology
CIVE 433	(3)	Urban Planning
ECON 205	(3)	An Introduction to Political Economy
ECON 225	(3)	Economics of the Environment
ECON 326	(3)	Ecological Economics
ECON 347	(3)	Economics of Climate Change
ECON 405	(3)	Natural Resource Economics
ENVR 201	(3)	Society and Environment
ENVR 203	(3)	Knowledge, Ethics and Environment
ENVR 400	(3)	Environmental Thought
GEOG 200	(3)	Geographical Perspectives: World Environmental Problems
GEOG 210	(3)	Global Places and Peoples
GEOG 216	(3)	Geography of the World Economy
GEOG 221	(3)	Environment and Health
GEOG 300	(3)	Human Ecology in Geography
GEOG 301	(3)	Geography of Nunavut
GEOG 302	(3)	Environmental Management 1
GEOG 303	(3)	Health Geography
GEOG 370	(3)	Protected Areas
GEOG 382	(3)	Principles Earth Citizenship
GEOG 403	(3)	Global Health and Environmental Change
GEOG 408	(3)	Geography of Development
GEOG 410	(3)	Geography of Underdevelopment: Current Problems
GEOG 508	(3)	Resources, People and Power
GEOG 530	(3)	Global Land and Water Resources
GEOG 551	(3)	Environmental Decisions

MGPO 440	(3)	Strategies for Sustainability
NRSC 221	(3)	Environment and Health
NRSC 437	(3)	Assessing Environmental Impact
NRSC 512	(3)	Water: Ethics, Law and Policy
NRSC 540	(3)	Socio-Cultural Issues in Water
PHIL 230	(3)	Introduction to Moral Philosophy 1
PHIL 237	(3)	Contemporary Moral Issues
PHIL 334	(3)	Ethical Theory
PHIL 343	(3)	Biomedical Ethics
PHIL 348	(3)	Philosophy of Law 1
POLI 211	(3)	Comparative Government and Politics
POLI 212	(3)	Government and Politics - Developed World
POLI 227	(3)	Developing Areas/Introduction
POLI 345	(3)	International Organizations
POLI 445	(3)	International Political Economy: Monetary Relations
POLI 466	(3)	Public Policy Analysis
PSYC 215	(3)	Social Psychology
RELG 270	(3)	Religious Ethics and the Environment
RELG 340	(3)	Religion and the Sciences
RELG 370	(3)	Religion and Human Rights
RELG 376	(3)	Religious Ethics
SOCI 222	(3)	Urban Sociology
SOCI 234	(3)	Population and Society
SOCI 235	(3)	Technology and Society
SOCI 254	(3)	Development and Underdevelopment
SOCI 386	(3)	Contemporary Social Movements
URBP 201	(3)	Planning the 21st Century City
URBP 506	(3)	Environmental Policy and Planning
URBP 530	(3)	Urban Environmental Planning
WILD 415*	(2)	Conservation Law

Natural Sciences and Technology

*Note: you may take MIMM 211 or LSCI 230 but not both; you may take ENVB 315 or BIOL 432 but not both.

AGRI 340	(3)	Principles of Ecological Agriculture
AGRI 435	(3)	Soil and Water Quality Management
ANSC 326	(3)	Fundamentals of Population Genetics
ANTH 311	(3)	Primate Behaviour and Ecology
ARCH 375	(2)	Landscape
ARCH 377	(3)	Energy, Environment and Buildings
ARCH 378	(3)	Site Usage
ATOC 215	(3)	Oceans, Weather and Climate
BIOL 240	(3)	Monteregian Flora
BIOL 305	(3)	Animal Diversity

BIOL 308	(3)	Ecological Dynamics
BIOL 310	(3)	Biodiversity and Ecosystems
BIOL 342	(3)	Marine Biology
BIOL 418	(3)	Freshwater Invertebrate Ecology
BIOL 432*	(3)	Limnology
BIOL 436	(3)	Evolution and Society
BIOL 465	(3)	Conservation Biology
BREE 217	(3)	Hydrology and Water Resources
BREE 322	(3)	Organic Waste Management
BREE 518	(3)	Bio-Treatment of Wastes
BTEC 502	(3)	Biotechnology Ethics and Society
CHEE 230	(3)	Environmental Aspects of Technology
CHEE 430	(3)	Technology Impact Assessment
CHEM 212	(4)	Introductory Organic Chemistry 1
CHEM 281	(3)	Inorganic Chemistry 1
CHEM 462	(3)	Green Chemistry
CIVE 225	(4)	Environmental Engineering
CIVE 323	(3)	Hydrology and Water Resources
CIVE 550	(3)	Water Resources Management
ENTO 340	(3)	Field Entomology
ENVB 210	(3)	The Biophysical Environment
ENVB 301	(3)	Meteorology
ENVB 305	(3)	Population & Community Ecology
ENVB 315*	(3)	Science of Inland Waters
ENVB 410	(3)	Ecosystem Ecology
ENVB 415	(3)	Ecosystem Management
ENVR 200	(3)	The Global Environment
ENVR 202	(3)	The Evolving Earth
EPSC 201	(3)	Understanding Planet Earth
EPSC 233	(3)	Earth and Life History
EPSC 425	(3)	Sediments to Sequences
EPSC 549	(3)	Hydrogeology
ESYS 301	(3)	Earth System Modelling
		Geographical Perspecti

MICR 331	(3)	Microbial Ecology
MIME 308	(3)	Social Impact of Technology
MIME 320	(3)	Extraction of Energy Resources
MIMM 211*	(3)	Introductory Microbiology
MIMM 314	(3)	Immunology
MIMM 323	(3)	Microbial Physiology
MIMM 324	(3)	Fundamental Virology
NRSC 333	(3)	Pollution and Bioremediation
NRSC 340	(3)	Global Perspectives on Food
NRSC 384	(3)	Field Research Project

- confirm that their course selection satisfies the required components of the MSE Core and their chosen Domain, and that the complementary courses are approved courses in their chosen Domain; and
- fulfil all Faculty requirements as specified for the B.A. in the Arts, see *Faculty of Arts* > *Faculty of Arts Degree Requirements*, which include meeting the minimum credit requirement as specified in their letter of admission.

8.1 Ecological Determinants of Health in Society Domain

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

Advisor	Mentor
Ms. Kathy Roulet Email: *kathy.roulet@mcgill.ca* Telephone: 514-398-4306	Professor Marilyn Scott Email: *marilyn.scott@mcgill.ca* Telephone: 514-398-7996

8.1.1 Bachelor of Arts (B.A.) - Faculty Program Environment - Ecological Determinants of Health in Society (54 credits)

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.

Program Prerequisites or Corequisites

All B.A. Environment students MUST take these pre- or corequisite courses, or their equivalents. These courses should be taken in the Freshman year if possible. Quebec students can take them in U1.

Calculus

3 credits of calculus from the following, or equivalent (e.g., CEGEP objective 00UN):

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

Basic Science

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

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

Suggested First Year (U1) Courses

For suggestions on courses to take in your first year (U1), you can consult the "MSE Student Handbook 2010-11" available on the MSE website (http://wwwws the requrses to tak

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

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

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

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

Complementary Courses (33 credits)

33 credits of complementary courses are chosen as follows:

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

9 credits from List A

6 credits from List B

Fundamentals:

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

Health and Environment

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

Health and Infection

GEOG 403	(3)	Global Health and Environmental Change
PARA 410	(3)	Environment and Infection

Health and Pollution

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

Economics

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

Nutrition

NUTR 200	(3)	Contemporary Nutrition
NUTR 207	(3)	Nutrition and Health

Statistics

One of the following statistics courses or equivalent:

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

AEMA 310	(3)	Statistical Methods 1
MATH 203	(3)	Principles of Statistics 1
SOCI 350	(3)	Statistics in Social Research

List A:

9 credits from List A (maximum 3 credits from any one category):

Health and Society

GEOG 303	(3)	Health Geography
SOCI 234	(3)	Population and Society
SOCI 309	(3)	Health and Illness

Hydrology and Climate

BREE 217	(3)	Hydrology and Water Resources
GEOG 321	(3)	Climatic Environments
GEOG 322	(3)	Environmental Hydrology
NRSC 510	(3)	Agricultural Micrometeorology

Agriculture

AGRI 210	(3)	Agro-Ecological History
AGRI 340	(3)	Principles of Ecological Agriculture
AGRI 411	(3)	Global Issues on Development, Food and Agriculture

Decision Making

AGEC 242	(3)	Management Theories and Practices
BTEC 502	(3)	Biotechnology Ethics and Society
ECON 440	(3)	Health Economics
PHIL 343	(3)	Biomedical Ethics
URBP 520	(3)	Globalization: Planning and Change

Biology Fundamentals:

AEBI 210	(3)	Organisms 1
AEBI 211	(3)	Organisms 2
BIOL 200	(3)	Molecular Biology
BIOL 205	(3)	Biology of Organisms
BIOL 308	(3)	Ecological Dynamics
ENVB 305	(3)	Population & Community Ecology
LSCI 211	(3)	Biochemistry 1
PHGY 202	(3)	Human Physiology: Body Functions

Development and Ecology

ANTH 212	(3)	Anthropology of Development
ANTH 339	(3)	Ecological Anthropology
GEOG 300	(3)	Human Ecology in Geography
SOCI 254	(3)	Development and Underdevelopment

List B:

6 credits from List B (maximum 3 credits from an

PSYC 533	(3)	International Health Psychology
SOCI 520	(3)	Migration and Immigrant Groups
SOCI 550	(3)	Developing Societies
SOCI 565	(3)	Social Change in Panama

8.2 Economics and the Earth's Environment Domain

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

Advisor	Mentor
Ms. Kathy Roulet Email: *kathy.roulet@mcgill.ca* Telephone: 514-398-4306	Professor Jeanne Paquette Email: *jeanne.paquette@mcgill.ca* Telephone: 514-398-4402

8.2.1 Bachelor of Arts (B.A.) - Faculty Program Environment - Economics and the Earth's Environment (54 credits)

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 that 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 ho

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

Core: Required Courses (18 credits)

Location Note: Core Required Courses for this program are taught at both McGill's downtown campus and at the Macdonald Campus in Ste. Anne de Bellevue. You should register in Section 001 of an ENVR course that you plan to take on the downtown campus, and in Section 051 of an ENVR course that you plan to take on the Macdonald campus.

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

Core: Complementary Course Senior Research Project (3 credits)

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

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

Domain: Required Cour Ko (6)

Advanced Courses

9 credits from:

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

AGRI 435	(3)	Soil and Water Quality Management
AGRI 452	(3)	Water Resources in Barbados
AGRI 550	(3)	Sustained Tropical Agriculture
ANTH 339	(3)	Ecological Anthropology
BIOL 305	(3)	Animal Diversity
BIOL 308	(3)	Ecological Dynamics
CHEE 430	(3)	Technology Impact Assessment
ECON 305	(3)	Industrial Organization
ECON 313	(3)	Economic Development 1
ECON 314	(3)	Economic Development 2
ECON 408	(3)	Public Sector Economics 1

Program Prerequisites or Corequisites

All B.A. Environment students must take these courses, or their equivalents. These courses should be taken in the Freshman year if possible. Quebec students can take them in U1.

Calculus

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

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

Basic Science

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

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

Suggested First Year (U1) Courses

For suggestions on courses to take in your first year (U1), you can consult the "MSE Student Handbook 2010-11" available on the MSE website (http://www.mcgill.ca/mse), or contact Ms. Kathy Roulet, the Program Advisor (kathy.roulet@mcgill.ca).

Program Requirements

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

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

Core: Required Courses (18 credits)

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

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

Core: Complementary Course - Senior Research PrENVR 301

GEOG 302	(3)	Environmental Management 1

Domain: Complementary Courses (21 credits)

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

Microeconomics

one of:

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

Statistics

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

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

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

Advanced Development Courses

6 credits from:

AGEC 442	(3)	Economics of International Agricultural Development
ANTH 418	(3)	Environment and Development
GEOG 408	(3)	Geography of Development
GEOG 410	(3)	Geography of Underdevelopment: Current Problems

Natural Sciences

3 credits from:

AGRI 550	(3)	Sustained Tropical Agriculture
BIOL 308	(3)	Ecological Dynamics
BIOL 465	(3)	Conservation Biology
BIOL 553	(3)	Neotropical Environments

Population & Community 6.925 1s 22901n0 1 165.864 245.485 Tm(5 1s 22901nENVB1 70.52 261.205 Tm(BIOL : CrT

AGRI 210	(3)	Agro-Ecological History
AGRI 452	(3)	Water Resources in Barbados
ANTH 439	(3)	Theories of Development
ANTH 445	(3)	Property and Land Tenure
CANS 407	(3)	Regions of Canada
ECON 326	(3)	Ecological Economics
ECON 405	(3)	Natural Resource Economics
GEOG 201	(3)	Introductory Geo-Information Science
GEOG 300	(3)	Human Ecology in Geography
GEOG 311	(3)	Economic Geography
GEOG 331	(3)	Urban Social Geography
GEOG 380	(3)	Adaptive Environmental Management
GEOG 404	(3)	Environmental Management 2
GEOG 408	(3)	Geography of Development
GEOG 416	(3)	Africa South of the Sahara
GEOG 496	(3)	Geographical Excursion
GEOG 498	(3)	Humans in Tropical Environments
GEOG 508	(3)	Resources, People and Power
GEOG 510	(3)	Humid Tropical Environments
GEOG 551	(3)	Environmental Decisions
MGPO 440	(3)	Strategies for Sustainability
POLI 445	(3)	International Political Economy: Monetary Relations
POLI 472	(3)	Developing Areas/Social Movements
SOCI 565	(3)	Social Change in Panama
URBP 507	(3)	Planning and Infrastructure
URBP 520	(3)	Globalization: Planning and Change

9 Bachelor of Arts and Science (B.A. & Sc.) - Interfaculty Program in Environment

The Interfaculty Program in Environment is open only to students in the B.A. & Sc. degree.

Advisor

Ms. Kathy Roulet, MSE Program Advisor
Email: *kathy.roulet@mcgill.ca*
Telephone: 514-398-4306

To obtain a B.A. & Sc. Interfaculty Program in Environment students must:

- register in the program online, using Minerva;
- satisfy the co- / prerequisites for the program;
- pass all courses counted tow satisfyc 0 0 1Tf11 0 0 1j/F0 8.1 Tf1 0 0 1(rm8.at8.1irs count se: cience the 0 1Tf11 0 0 1j/F0 8.1 Tf1 0 0 1(em8.1 tes frj1comp4-3t:)T

9.1 Bachelor of Arts and Science (B.A. & Sc.) - Interfaculty Program Environment (54 credits)

The growth of technology, globalization of economies, and rapid increases in population and per capita consumption have all had dramatic environmental impacts. The Interfaculty Program Environment for the Bachelor of Arts and Science is designed to provide students with a broad "Liberal Arts/Science" training. In combination with careful mentoring, this program offers a great degree of flexibility, allowing students to develop the skills and knowledge base required to fa1.19as22 T 0 0 1The gro

Areas:

30 credits from at least 3 of the following Areas. At least 6 credits must be at the 400-level or higher, selected either from these lists or in consultation with the Program Advisor.

Area 1: Population, Community and Ecosystem Ecology

* Note: you may take BIOL 540 or ENVR 540 but not both.

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

Area 2: Biodiversity and Conservation

BIOL 305	(3)	Animal Diversity
BIOL 341	(3)	History of Life
BIOL 355	(3)	Trees: Ecology & Evolution
BIOL 427	(3)	Herpetology
BIOL 465	(3)	Conservation Biology
ENTO 440	(3)	Insect Diversity
MICR 331	(3)	Microbial Ecology
PLNT 358	(3)	Flowering Plant Diversity
WILD 307	(3)	Natural History of Vertebrates
WILD 350	(3)	Mammalogy
WILD 420	(3)	Ornithology

Area 3: Field studies in ecology and conservation

BIOL 240	(3)	Monteregian Flora

EPSC 549	(3)	Hydrogeology
GEOG 322*	(3)	Environmental Hydrology
GEOG 372	(3)	Running Water Environments
GEOG 522	(3)	Advanced Environmental Hydrology
GEOG 537	(3)	Advanced Fluvial Geomorphology
NRSC 540	(3)	Socio-Cultural Issues in Water

Area 5: Human Health

* Note: you may take ANSC 330 or NUTR 307 but not both; you may take PHAR 303 or NUTR 420 but not both.

ANSC 330*	(3)	Fundamentals of Nutrition
NUTR 307*	(3)	Human Nutrition
NUTR 420*	(3)	Toxicology and Health Risks
PARA 410	(3)	Environment and Infection
PATH 300	(3)	Human Disease
PHAR 303*	(3)	Principles of Toxicology

Area 6: Earth and soil sciences

ATOC 215	(3)	Oceans, Weather and Climate
EPSC 201	(3)	Understanding Planet Earth
GEOG 272	(3)	Earth's Changing Surface
GEOG 305	(3)	Soils and Environment
GEOG 321	(3)	Climatic Environments
SOIL 326	(3)	Soils in a Changing Environment

Area 7: Economics

* Note: you may take AGEC 200 or ECON 208 but not both.

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

Area 8: Development and Underdevelopment

ANTH 212	(3)	Anthropology of Development
ANTH 418	(3)	Environment and Development

POLI 445	(3)	International Political Economy: Monetary Relations
SWRK 374	(3)	Community Development/Social Action

Area 9: Cultures and People

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

Area 10: Human Ecology and Health

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

Area 11: Spirituality, Philosophy, Thought

EDER 461	(3)	Society and Change
PHIL 220	(3)	Introduction to History and Philosophy of Science 1
PHIL 221	(3)	Introduction to History and Philosophy of Science 2
PHIL 237	(3)	Contemporary Moral Issues
PHIL 341	(3)	Philosophy of Science 1
PHIL 348	(3)	Philosophy of Law 1
RELG 270	(3)	Religious Ethics and the Environment
RELG 340	(3)	Religion and the Sciences
RELG 370	(3)	Religion and Human Rights

Area 12: Environmental Management

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

AGRI 210	(3)	Agro-Ecological History
AGRI 435	(3)	Soil and Water Quality Management
AGRI 452	(3)	Water Resources in Barbados
ENTO 336	(3)	Economic Entomology
GEOG 302	(3)	Environmental Management 1
GEOG 380	(3)	Adaptive Environmental Management
GEOG 404	(3)	Environmental Management 2
NRSC 333	(3)	Pollution and Bioremediation
NRSC 382	(3)	Ecological Monitoring and Analysis
NRSC 383	(3)	Land Use: Redesign and Planning
NRSC 437	(3)	Assessing Environmental Impact
SOIL 335	(3)	Soil Ecology and Management
WILD 401	(4)	Fisheries and Wildlife Management

WILD 415*	(2)	Conservation Law
WOOD 441	(3)	Integrated Forest Management

10 Major in Environment – B.Sc.(Ag.Env.Sc.) and B.Sc.

Students in the Faculty of Agricultural and Environmental Sciences B.Sc.(Ag.Env.Sc.) program and students in the Faculty of Science B.Sc. program can register in the Major in Environment.

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

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

    - Biodiversity and Conservation
    - Ecological Determinants of Health (Population, and Cellular stream options)
    - Environmetrics
    - Food Production and Environment
    - Land Surface Processes and Environmental Change
    - Renewable Resource Management
    - Water Environments and Ecosystems (Biological, and Physical stream options)

    B.Sc. students in the Faculty of Science can also choose from the following two domains:

    - Atmospheric Environment and Air Quality
    - Earth Sciences and Economics

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

To obtain a Major in Environment, students must:

- register in a Domain online using Minerva;
- pass all courses counted 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
- fulfil all faculty requirements as specified by the faculty in which they are registered: for the B.Sc.(Ag.Env.Sc.), refer to *Faculty of Agricultural and Environmental Sciences* > *Faculty Information and Regulations*; for the B.Sc., see *Faculty of Science* >

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.

Suggested First Year (U1) Courses

For suggestions on courses to take in your first year (U1), you can consult the "MSE Student Handbook 2010-11" available on the MSE website (http://www.mcgill.ca/mse), or contact Ms. Kathy Roulet, the Program Advisor (kathy.roulet@mcgill.ca).

Program Requirements

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

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

Core: Required Courses (18 credits)

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

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

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

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

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

Domain: Complementary Courses (42 credits)

42 credits of complementary courses are selected as follows:

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

3 credits - ecology

3 credits - statistics

9 credits - interface between science, policy and management

3 credits - field courses

6 credits - general scientific principles

3 credits - social science

6 credits - organisms and diversity

Biological Principles of Diversity/Systematics/Conservation:

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

one of:

AEBI 212	(3)	Evolution and Phylogeny

BIOL 304	(3)	Evolution

one of:

AEBI 211	(3)	Organisms 2
BIOL 305	(3)	Animal Diversity

one of:

BIOL 465	(3)	Conservation Biology
WILD 421	(3)	Wildlife Conservation

GEOG 497	(3)	Ecology of Coastal Waters
GEOG 499	(3)	Subarctic Field Studies
WILD 475	(3)	Desert Ecology

Organisms and Diversity:

6 credits of organisms and diversity selected as follows:

* Note: you may take BIOL 350 or ENTO 350 but not both; you may take BIOL 540 or ENVR 540 but not both.

AGRI 340	(3)	Principles of Ecological Agriculture
ANTH 311	(3)	Primate Behaviour and Ecology
BIOL 335	(3)	Marine Mammals
BIOL 350*	(3)	Insect Biology and Control
BIOL 355	(3)	Trees: Ecology & Evolution
BIOL 427	(3)	Herpetology
BIOL 540*	(3)	Ecology of Species Invasions
ENTO 350*	(3)	Insect Biology and Control
ENTO 352	(3)	Control of Insect Pests
ENTO 440	(3)	Insect Diversity
ENVR 540*	(3)	Ecology of Species Invasions
PLNT 304	(3)	Biology of Fungi
PLNT 358	(3)	Flowering Plant Diversity
PLNT 458	(3)	Flowering Plant Systematics
WILD 307	(3)	Natural History of Vertebrates
WILD 350	(3)	Mammalogy
WILD 420	(3)	Ornithology
WILD 424	(3)	Parasitology

10.2 Ecological Determinants of Health Domain

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

Advisor	Mentor
Ms. Kathy Roulet	Professor Marilyn Scott Email:

For suggestions on courses to take in your first year (U1), you can consult the "MSE Student Handbook 2010-11" available on the MSE website (http://www.mcgill.ca/mse), or contact Ms. Kathy Roulet, the Program Advisor (kathy.roulet@mcgill.ca).

Program Requirements

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.

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

Core: Required Courses (18 credits)

Location Note: Core Required courses for this program are taught at both McGill's downtown campus and at the Macdonald Campus in Ste. Anne de Bellevue. You should register in Section 001 of an ENVR course that you plan to take on the downtown campus, and in Section 051 of an ENVR course that you plan to take on the Macdonald campus.

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

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

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

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

Domain: Required Course (3 credits)

PARA 410	(3)	Environment and Infection

Domain: Complementary Courses (39 credits)

39 credits of the Complementary Courses are selected as follows:

21 credits - Fundamentals, 3 credits from each category

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

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

Fundamentals:

21 credits of Fundamentals, 3 credits from each category.

Health, Society and Environment

* Note: you may take GEOG 221 or NRSC 221 but not both.

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

Toxicology

(3)(3) Animal Health and Disease

WILD 424	(3)	Parasitology

Nutrition

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

Drugs and Hormones

ANSC 424	(3)	Metabolic Endocrinology
PHAR 300	(3)	Drug Action

Physiology

ANSC 323	(3)	Mammalian Physiology
PHGY 209	(3)	Mammalian Physiology 1

Natural Environment:

6 credits chosen from the Natural Environment, maximum of 3 credits from any one category:

Hydrology and Climate

AGRI 452	(3)	Water Resources in Barbados
BREE 217	(3)	Hydrology and Water Resources
GEOG 321	(3)	Climatic Environments
GEOG 322	(3)	Environmental Hydrology
NRSC 510	(3)	Agricultural Micrometeorology

Techniques and Management

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

Pest Management

* Note: you may take BIOL 350 or ENTO 350 but not both.

BIOL 350*	(3)	Insect Biology and Control
ENTO 350*	(3)	Insect Biology and Control
ENTO 352	(3)	Control of Insect Pests

Pollution Control and Management

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

Ecology

* Note: you may take ENVR 540 or BIOL 540 but not both.

BIOL 432	(3)	Limnology
BIOL 465	(3)	Conservation Biology
BIOL 540*	(3)	Ecology of Species Invasions
BIOL 553	(3)	Neotropical Environments
ENVB 410	(3)	Ecosystem Ecology
ENVR 540*	(3)	Ecology of Species Invasions
MICR 331	(3)	Microbial Ecology

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

Domain: Required Course (3 credits)

PARA 410	(3)	Environment and Infection

Domain: Complementary Courses (39 credits)

39 credits of Complementary Courses are selected as follows:

21 credits - Fundamentals, maximum of 3 credits from each category

6 credits - List A categories, maximum of 3 credits from any one category

12 credits - List B categories, maximum of 3 credits from any one category

Fundamentals:

21 credits of fundamentals, 3 credits from each category:

Health and Envir

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

Advanced Ecology

* Note: you may take ENVR 540 or BIOL 540 but not both.

AEMA 406	(3)	Quantitative Methods: Ecology
BIOL 465	(3)	Conservation Biology
BIOL 540*	(3)	Ecology of Species Invasions
BIOL 553	(3)	Neotropical Environments
ENVB 410	(3)	Ecosystem Ecology
ENVR 540*	(3)	Ecology of Species Invasions
MICR 331	(3)	Microbial Ecology
PLNT 460	(3)	Plant Ecology
WILD 410	(3)	Wildlife Ecology

List A:

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

Hydrology, Climate, and Agriculture

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

Decision Making and Social Change

* Note: you may take AGEC 200 or ECON 208 but not both.

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

Development and History

AGRI 210	(3)	Agro-Ecological History
ANTH 212	(3)	Anthropology of Development

HIST 292	(3)	History and the Environment
SOCI 254	(3)	Development and Underdevelopment

List B:

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

Techniques and Management

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

Immunology and Infectious Disease

ANSC 400	(3)	Eukaryotic Cells and Viruses
MIMM 314	(3)	Immunology
MIMM 324	(3)	Fundamental Virology
MIMM 413	(3)	Parasitology
PARA 438	(3)	Immunology
WILD 424	(3)	Parasitology

LSCI 204	(3)	Genetics

10.3 Environmetrics Domain

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

Advisor	Mentor
Ms. Kathy Roulet Email: *kathy.roulet@mcgill.ca* Telephone: 514-398-4306	Professor Pierre Dutilleul Email: *pierre.dutilleul@mcgill.ca* Telephone: 514-398-7870

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

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

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

Graduates will be capable of effectively participating in the design of environmental studies and adequately analyzing data for use by the environmental community. Accordingly, the list of courses for the Environmetrics Domain is composed primarily of statistics courses and mathematically oriented courses with biological and ecological applications. The list is completed by 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 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 complementary courses along each of two axes: statistics and mathematics, and environmental sciences. An internship is also offered to students to provide them with preliminary professional experience.

Suggested First Year (U1) Courses

For suggestions on courses to take in your first year (U1), you can consult the 'MSE Student Handbook 2010-11' (available on the MSE website http://www.mcgill.ca/mse, or contact Kathy Roulet, the Program Advisor (kathy.roulet@mcgill.ca).

Prerequisites and equivalent courses are common with math courses, so check with your advisor when choosing your courses. Be especially careful with statistics courses, as you will receive no credit (and no warning!) for a course that is considered equivalent to one you have already taken. Note: Credit given for statistics courses is subject to certain restrictions. Students in Science should consult the "Course Overlap" information in the "Course Requirements" section for the Faculty of Science.

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

Program Requirements

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

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

Core: Required Courses (18 credits)

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

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

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

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

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

GEOG 322	(3)	Environmental Hydrology
GEOG 350	(3)	Ecological Biogeography

3 credits minimum of environmental sciences chosen from:

AGRI 452	(3)	Water Resources in Barbados
AGRI 550	(3)	Sustained Tropical Agriculture
BIOL 331	(3)	Ecology/Behaviour Field Course
BIOL 553	(3)	Neotropical Environments
ENVB 313	(3)	Phylogeny and Biogeography
GEOG 300	(3)	Human Ecology in Geography
GEOG 302	(3)	Environmental Management 1
GEOG 404	(3)	Environmental Management 2
GEOG 494	(3)	Urban Field Studies
GEOG 497	(3)	Ecology of Coastal Waters
GEOG 499	(3)	Subarctic Field Studies
NRSC 333	(3)	Pollution and Bioremediation
PLNT 460	(3)	Plant Ecology
WILD 401	(4)	Fisheries and Wildlife Management
WOOD 300	(3)	Urban Forests and Trees
WOOD 420	(3)	Environmental Issues: Forestry

10.4 Food Production and Environment Domain

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

Advisor	Mentor
Ms. Kathy Roulet Email: *kathy.roulet@mcgill.ca* Telephone: 514-398-4306	Professor Joan Marshall email: *joan.marshall@mcgill.ca* Telephone: 514-398-7822

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

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

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LSCI 211	(3)	Biochemistry 1

One of the following courses or CEGEP equivalent (e.g., CEGEP objective 00XV).

CHEM 212	(4)	Introductory Organic Chemistry 1
FDSC 230	(4)	Organic Chemistry

Suggested First Year (U1) Courses

For suggestions on courses to take in your first year (U1), you can consult the "MSE Student Handbook 2010-11" available on the MSE website (http://www.mcgill.ca/mse), or contact Ms. Kathy Roulet, the Program Advisor (kathy.roulet@mcgill.ca).

Program Requirements

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.

Location Note: When planning their schedule and registering for courses, students should verify where each course is offered because courses for this program

One of the following statistics courses or equivalent:

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

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

One of:

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

One of:

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

One of:

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

One of:

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

Applied Sciences:

12 credits of Applied Sciences from the following:

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

AGRI 411	(3)	Global Issues on Development, Food and Agriculture
AGRI 435	(3)	Soil and Water Quality Management
AGRI 550	(3)	Sustained Tropical Agriculture
BIOL 465	(3)	Conservation Biology
BIOL 553	(3)	Neotropical Environments
BREE 217*	(3)	Hydrology and Water Resources
BREE 322	(3)	Organic Waste Management
BREE 518	(3)	Bio-Treatment of Wastes
ENTO 446	(3)	Apiculture
FDSC 200*	(3)	Introduction to Food Science
FDSC 535	(3)	Food Biotechnology
GEOG 302	(3)	Environmental Management 1
GEOG 322*	(3)	Environmental Hydrology
GEOG 380	(3)	Adaptive Environmental Management
MICR 331	(3)	Microbial Ecology

NRSC 333	(3)	Pollution and Bioremediation
NRSC 437	(3)	Assessing Environmental Impact
NUTR 207*	(3)	Nutrition and Health
NUTR 403	(3)	Nutrition in Society
NUTR 420	(3)	Toxicology and Health Risks
PARA 410	(3)	Environment and Infection
PHAR 303	(3)	Principles of Toxicology
PLNT 434	(3)	Weed Biology and Control
SOIL 315	(3)	Soil Fertility and Fertilizer Use
SOIL 445	(3)	Agroenvironmental Fertilizer Use
SOIL 510	(3)	Environmental Soil Chemistry
SOIL 521	(3)	Soil Microbiology and Biochemistry
WILD 401	(4)	Fisheries and Wildlife Management

Social Sciences/Humanities:

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

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

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

AGEC 200*	(3)	Principles of Microeconomics
AGEC 320	(3)	Intermediate Microeconomic Theory
AGEC 333*	(3)	Resource Economics
AGEC 430	(3)	Agriculture, Food and Resource Policy
AGEC 442	(3)	Economics of International Agricultural Development
ANTH 418	(3)	Environment and Development
ECON 208*	(3)	Microeconomic Analysis and Applications
ECON 225	(3)	Economics of the Environment
ECON 405*	(3)	Natural Resource Economics
ENVR 465	(3)	Environment and Social Change
GEOG 404	(3)	Environmental Management 2
GEOG 410	(3)	Geography of Underdevelopment: Current Problems
GEOG 498	(3)	Humans in Tropical Environments
GEOG 510	(3)	Humid Tropical Environments
SOCI 254	(3)	Development and Underdevelopment
SOCI 565	(3)	Social Change in Panama
WILD 415**	(2)	Conservation Law

10.5 Land Surface Processes and Environmental Change Domain

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

Advisor	Mentor
Ms. Kathy Roulet	Professor Ian Strachan Email: Email: Email: Email: virvironment 9ope10 0hano studersi1 0 0 1 221.94915r

Advisor	Mentor
Telephone: 514-398-4306	Telephone: 514-398-7935

10.5.1 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) or Bachelor of Science (B.Sc.)-Major Environment - Land Surface Processes and Environmental Change (63 credits)

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

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 greenhouse gases (water vapour, CO2 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.

Suggested First Year (U1) Courses

For suggestions on courses to take in your first year (U1), you can consult the "MSE Student Handbook 2010-11" available on the MSE website (http://www.mcgill.ca/mse), or contact Ms. Kathy Roulet, the Program Advisor (kathy.roulet@mcgill.ca).

Program Requirements

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

Location Note: Core Required courses for this program are taught at both McGill's downtown campus and at the Macdonald Campus in Ste. Anne de Bellevue.

Core: Required Courses (18 credits)

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

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

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

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

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

Domain Required Course (3 credits)

GEOG 203	(3)	Environmental Systems

Domain: Complementary Courses (39 credits)

39 credits of Complementary Courses are selected as follows:

9 credits - 3 credits from each category of Statistics, Geo-Information Science, Weather and Climate

9 credits of fundamental land surface processes

3 credits of environment and resource management

3 credits of field course

3 credits of social science

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

Statistics

One of the following statistics courses or equivalent:

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

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

GIS and Remote Sensing Techniques

one of:

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

Weather and Climate

one of:

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

Fundamental Land Surface Processes:

9 credits of fundamental land surface processes chosen as follows:

GEOG 321	(3)	Climatic Environments

and/or one of:

GEOG 272	(3)	Earth's Changing Surface
SOIL 300	(3)	Geosystems

and/or one of:

GEOG 305	(3)	Soils and Environment
SOIL 326	(3)	Soils in a Changing Environment

and/or one of:

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

Environment and Resource Management:

one of:

AGRI 435	(3)	Soil and Water Quality Management
AGRI 452	(3)	Water Resources in Barbados
AGRI 550	(3)	Sustained Tropical Agriculture
BIOL 308	(3)	Ecological Dynamics
BIOL 465	(3)	Conservation Biology
CHEE 230	(3)	Environmental Aspects of Technology
CIVE 225	(4)	Environmental Engineering
ENVB 305	(3)	Population & Community Ecology
ESYS 301	(3)	Earth System Modelling
GEOG 302	(3)	Environmental Management 1
GEOG 380	(3)	Adaptive Environmental Management
GEOG 404	(3)	Environmental Management 2
NRSC 437	(3)	Assessing Environmental Impact
WILD 421	(3)	Wildlife Conservation
WOOD 420	(3)	Environmental Issues: Forestry
WOOD 441	(3)	Integrated Forest Management

Field Course:

one of:

BIOL 553	(3)	Neotropical Environments
GEOG 495	(3)	Field Studies - Physical Geography
GEOG 496	(3)	Geographical Excursion
GEOG 499	(3)	Subarctic Field Studies
NRSC 437	(3)	Assessing Environmental Impact
WILD 475	(3)	Desert Ecology

Social Science:

one of:

AGEC 333	(3)	Resource Economics
ANTH 339	(3)	Ecological Anthropology
ECON 225	(3)	Economics of the Environment
ECON 326	(3)	Ecological Economics
ECON 405	(3)	Natural Resource Economics
GEOG 221	(3)	Environment and Health
GEOG 408	(3)	Geography of Development
GEOG 498	(3)	Humans in Tropical Environments
GEOG 508	(3)	Resources, People and Power
NRSC 221	(3)	Environment and Health
SOCI 565	(3)	Social Change in Panama
URBP 520	(3)	Globalization: Planning and Change

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

List A - Particular Environments:

3 to 9 credits of advanced study of Particular Environments:

BIOL 432	(3)	Limnology
ENVB 315	(3)	Science of Inland Waters
ENVB 410	(3)	Ecosystem Ecology
GEOG 350	(3)	Ecological Biogeography
GEOG 372	(3)	Running Water Environments
GEOG 470	(3)	Wetlands
GEOG 536	(3)	Geocryology
GEOG 550	(3)	Historical Ecology Techniques
PLNT 358	(3)	Flowering Plant Diversity
PLNT 460	(3)	Plant Ecology

List B - Surface Processes:

3 to 9 credits advanced study of Surface Processes:

ATOC 315	(3)	Water in the Atmosphere
BREE 509	(3)	Hydrologic Systems and Modelling
EPSC 549	(3)	Hydrogeology
EPSC 580	(3)	Aqueous Geochemistry
GEOG 501	(3)	Modelling Environmental Systems
GEOG 505	(3)	Global Biogeochemistry
GEOG 522	(3)	Advanced Environmental Hydrology
GEOG 537	(3)	Advanced Fluvial Geomorphology
NRSC 333	(3)	Pollution and Bioremediation
SOIL 331	(3)	Soil Physics
SOIL 510	(3)	Environmental Soil Chemistry

10.6 Renewable Resource Management Domain

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

Advisor	Mentor
Ms. Kathy Roulet, MSE Program Advisor Email: *kathy.roulet@mcgill.ca* Telephone: 514-398-4306**Ag.En63s adv**63s advAg.En	Professor Sylvie deBlois Email: *sylvie.deblois@mcgill.ca* Telephone: 514-398-7851

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 pro

6 credits - advanced ecosystem components

6 credits - advanced ecological processes

6 credits - social processes

9 credits - ecosystem components or management of ecosystems

Basic Principles of Ecosystem Processes:

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

one of:

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

one of:

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

one of:

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Advisor	Mentor
Ms. Kathy Roulet Email: *kathy.roulet@mcgill.ca* Telephone: 514-398-4306	Professor Brian Leung Email: *brian.leung2@mcgill.ca* Telephone: 514-398-6460

Water Environments and Ecosystems – Physical

Advisor	Mentor
Ms. Kathy Roulet Email: *kathy.roulet@mcgill.ca* Telephone: 514-398-4306	Professor Nigel Roulet Email: *nigel.roulet@mcgill.ca* Telephone: 514-398-4945

10.7.1 Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) or Bachelor of Science (B.Sc.) - Major Environment -Water Environments and Ecosystems - Biological (60 credits)

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

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

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

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.

Suggested First Year (U1) Courses

For suggestions of courses to take in your first year (U1), you can consult the "MSE Student Handbook 2010-11" available on the MSE website (http://www.mcgill.ca/mse), or contact Ms. Kathy Roulet, Program Advisor (kathy.roulet@mcgill.ca).

Program Requirements

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

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

Core: Required Courses (18 credits)

Location Note: Core Required courses for this program are taught at both McGill's downtown campus and at the Macdonald Campus in Ste. Anne de Bellevue. You should register in Section 001 of an ENVR course that you plan to take on the downtown campus, and in Section 051 of an ENVR course that you plan to take on the Macdonald campus.

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

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

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

AGRI 519	(6)	Sustainable Development Plans

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

Domain: Required Courses (6 credits)

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

Domain: Complementary Courses (33 credits)

33 credits of Complementary Courses are selected as follows:

6 credits - hydrology/water resources, population/community and ecology

3 credits - math and statistics

3 credits - field course

3 credits - Social sciences and policy

18 credits chosen in total from List A and List B

Hydrology/Water Resources, Population/Community and Ecology:

6 credits selected as follows:

one of:

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

and one of:

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

Math and Statistics:

one of:

* Note: AEMA 310 or equivalent

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

Field Course:

3 credits selected from the following courses or an equivalent aquatic field course:

AGRI 452	(3)	Water Resources in Barbados
BIOL 331	(3)	Ecology/Behaviour Field Course
GEOG 495	(3)	Field Studies - Physical Geography

Social Sciences and Policy:

one of:

AGEC 333	(3)	Resource Economics

ANTH 339	(3)	Ecological Anthropology
ANTH 418	(3)	Environment and Development
ECON 225	(3)	Economics of the Environment
ECON 326	(3)	Ecological Economics
GEOG 404	(3)	Environmental Management 2
GEOG 498	(3)	Humans in Tropical Environments
	(3)	International Organizations

CHEM 297*	(1)	Introductory Analytical Chemistry Laboratory
CHEM 419*	(3)	Advances in Chemistry of Atmosphere
EPSC 220	(3)	Principles of Geochemistry
GEOG 201	(3)	Introductory Geo-Information Science
GEOG 308	(3)	Principles of Remote Sensing
GEOG 372	(3)	Running Water Environments
GEOG 522	(3)	Advanced Environmental Hydrology
GEOG 537	(3)	Advanced Fluvial Geomorphology
GEOG 550	(3)	Historical Ecology Techniques
NRSC 430	(3)	GIS for Natural Resource Management

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

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

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

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

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

Suggested First Year (U1) Courses

For suggestions on courses to take in your first year (U1), you can consult the "MSE Student Handbook 2010-11" available on the MSE website (http://www.mcgill.ca/mse), or contact Ms. Kathy Roulet, the Program Advisor (kathy.roulet@mcgill.ca).

Program Requirements

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

ENVR 451	(6)	Research in Panama

Domain: Required Courses (12 credits)

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

Domain: Complementary Courses (30 credits)

30 credits of Complementary Courses are selected as follows:

6 credits - hydrology/water resources, population, community and ecology

3 credits - statistics or calculus

3 credits - field course

12 credits chosen from List A

6 credits chosen from List B

Hydrology/Water Resources, Population/Community and Ecology

6 credits selected as follows:

one of:

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

and one of:

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

Statistics or Calculus:

one of:

* Note: AEMA 310 or equivalent.

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

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

Field Course:

3 credits selected from the following courses or an equivalent aquatic field course:

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

List A:

12 credits chosen from:

Soil and W

11 Major in Environment – B.Sc.

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

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

Refer to *section 10: Major in Environment – B.Sc.(Ag.Env.Sc.) and B.Sc.* for the general guidelines and regulations which apply to all Domains in the Major in Environment program.

11.1 Atmospheric Environment and Air Quality Domain

This domain is open only to students in the B.Sc. Major in Environment program in the Faculty of Science.

Advisor	Mentor
Ms. Kathy Roulet Email: *kathy.roulet@mcgill.ca* Telephone: 514-398-4306	Professor Frédéric Fabry Email: *frederic.fabry@mcgill.ca* Telephone: 514-398-3652

11.1.1 Bachelor of Science (B.Sc.) - Major Environment - Atmospheric Environment and Air Quality (60 credits)

The rapid expansion of industrialization has been accompanied with a host of environmental problems, many, if not most, involving 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-ho

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

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

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

Domain: Required Courses (18 credits)

18 credits are selected from:

* Note: you may take k

* Note: you may take ATOC 419 or CHEM 419 but not both; you may take MATH 315 or AEMA 305 but not both.

AEMA 305*	(3)	Differential Equations		
ATOC 309	(3)	Weather Radars and Satellites		
ATOC 412	(3)	Atmospheric Dynamics		
ATOC 419*	(3)	Advances in Chemistry of Atmosphere	(3)	
ATOC 540	(3)	Synoptic Meteorology 1		
CHEE 230	(3)	Environmental Aspects of Technology		

Introductory Physical

3 credits - statistics courses

9 credits - List A

12 credits - List B

Statistics:

One of the following statistics courses or equivalent.

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

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

List A:

9 credits from:

*Note: you may take CHEE 430 or NRSC 437 but not both.

AGEC 333	(3)	Resource Economics
CHEE 430*	(3)	Technology Impact Assessment
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
NRSC 437*	(3)	Assessing Environmental Impact

List B:

12 credits from:

AGRI 435	(3)	Soil and Water Quality Management
ANTH 339	(3)	Ecological Anthropology
BIOL 305	(3)	Animal Diversity
BIOL 553	(3)	Neotropical Environments
ECON 305	(3)	Industrial Organization
ECON 313	(3)	Economic Development 1
ECON 314	(3)	Economic Development 2
ECON 408	(3)	Public Sector Economics 1
ECON 409	(3)	Public Sector Economics 2
ECON 412	(3)	Topics in Economic Development 1
EPSC 312	(3)	Spectroscopy of Minerals
EPSC 331	(3)	Field School 2
EPSC 341	(3)	Field School 3
EPSC 425	(3)	Sediments to Sequences
EPSC 435	(3)	Applied Geophysics
EPSC 452	(3)	Mineral Deposits
EPSC 519	(3)	Isotope Geology
EPSC 542	(3)	Chemical Oceanography
EPSC 549	(3)	Hydrogeology

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

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

In addition, students must satisfy the following:

1. Students apply for the Honours program in March of their U2 year

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

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

In addition, students must satisfy the following:

1. Students apply for the Honours program in March of their U2 year. See the Program Advisor for details.

2. Applicants must have a minimum Program GPA (GPA of all required and complementary courses for the program in Environment taken at McGill) of 3.3 to enter the Honours program.

3. Students must earn a B grade (3.0) or higher for the Honours Research courses (ENVR 496 and ENVR 497).

4. Students are required to achieve a minimum overall CGPA of 3.0 at graduation, and a minimum Program GPA of 3.3 to obtain Honours.

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

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

Honours - Required Courses (6 credits)

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

13 Diploma in Environment

Advisor

Ms. Kathy Roulet, MSE Program Advisor
Email: *kathy.roulet@mcgill.ca*
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13.1 Diploma in Environment (30 credits)

The Diploma in Environment 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 in Environment.

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.

Advising Note:

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

Location Note:

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

Required Courses (18 credits)

Location Note: The ENVR courses are offered on both campuses. You should register in Section 001 of an ENVR course that you plan to take on the downtown campus, and in Section 051 of an ENVR course that you plan to take on the Macdonald campus.

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

Complementary Courses (12 credits)

12 credits of Complementary Courses are selected as follows:

3 credits - must be taken with the approval of the Program Advisor in an area outside of the student's previous degree (e.g., those with a B.A. or equivalent degree must take at least 3 credits in the natural sciences; those with a B.Sc. or equivalent degree must take at least 3 credits in the social sciences). A list of Suggested Courses is given below.

9 credits - must be taken in an area of focus chosen by the student with the approval of the Program Advisor. At least 6 credits must be taken at the 400-level or higher. A list of Suggested Courses is given below.

Suggested Courses List

The Suggested Courses List is divided into two Thematic Categories: Social Sciences and Policy; and Natural Sciences and Technology.

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

This list is not meant to be exhaustive. You are also encouraged to examine the course lists.52 474.402 Tm(This list6sIrse lists.52 474474.402 Tm(Y)Tj1 01bh.204 u82 T

Natural Sciences and Technology

* Note: you may take MIMM 211 or LSCI 230 but not both; you may take ENVB 315 or BIOL 432 but not both.

AGRI 340	(3)	Principles of Ecological Agriculture
AGRI 435	(3)	Soil and Water Quality Management
ANSC 326	(3)	Fundamentals of Population Genetics
ANTH 311	(3)	Primate Behaviour and Ecology
ARCH 375	(2)	Landscape
ARCH 377	(3)	Energy, Environment and Buildings
ARCH 378	(3)	Site Usage
ATOC 215	(3)	Oceans, Weather and Climate
BIOL 240	(3)	Monteregian Flora
BIOL 305	(3)	Animal Diversity
BIOL 308	(3)	Ecological Dynamics
	(3)v	Biodiversity and Ecosystems

EPSC 425	(3)	Sediments to Sequences
EPSC 549	(3)	Hydrogeology
ESYS 301	(3)	Earth System Modelling
GEOG 200	(3)	Geographical Perspectives: World Environmental Problems
GEOG 201	(3)	Introductory Geo-Information Science
GEOG 205	(3)	Global Change: Past, Present and Future
GEOG 272	(3)	Earth's Changing Surface
GEOG 308	(3)	Principles of Remote Sensing
GEOG 321	(3)	Climatic Environments
GEOG 322	(3)	Environmental Hydrology
GEOG 372	(3)	Running Water Environments
GEOG 470	(3)	Wetlands
LSCI 230*	(3)	Introductory Microbiology
MICR 331	(3)	Microbial Ecology
MIME 308	(3)	Social Impact of Technology
MIME 320	(3)	Extraction of Energy Resources
MIMM 211*	(3)	Introductory Microbiology
MIMM 314	(3)	Immunology
MIMM 323	(3)238272gy	Microbial Physiology
MIMM 324	(3)	Fundamental Virology
NRSC 333	(3)	Pollution and Bioremediation
NRSC 340	(3)	Global Perspectives on Food
NRSC 384	(3)	Field Research Project
		GIS for Natural Resource Managej1 5L5uOf4