McGill School of Environment

Programs, Courses and University Regulations

2013-2014

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

1 . McGill University reserves the right to mak

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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.

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

Focusing on six themes:

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

3 Revisions – McGill School of Environment

Major in Environment - B.Sc.(Ag.Env.Sc.) and B.Sc.

section 11.4.1: Bachelor of Science (Agricultural and EnvirRt/F2 8.1 Tf1 .44 4gtat wilw 11.4.1

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Adjunct Professors

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

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

5 Admission, Registration, and Regulations

Impor

1. A **Minor in Environment** is open to all undergraduate students. For more information, see *section 8: Minor in Environment*.
2. A **Faculty Program in Environment leading to a B.A.** is open to students meeting the entrance requirements of the Faculty of Arts. For more information, see *section 9: B.A. Faculty Program in Environment*.

8.1 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 Adviser 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, contact:

Ms. Kathy Roulet, MSE Program Adviser

Email: 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:

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

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; you may take BIOL 308 or ENVB 305, but not both.

AGRI 340	(3)	Principles of Ecological Agriculture
AGRI 435	(3)	Soil and Water Quality Management
ANSC 326	(3)	Fundamentals of Population Genetics
ANTH 311	(3)	Primate Behaviour and Ecology
ARCH 375	(2)	Landscape
ARCH 377	(3)	Energy, Environment and Buildings
ARCH 378	(3)	Site Usage
ATOC 215	(3)	Oceans, Weather and Climate
BIOL 240	(3)	Monteregian Flora
BIOL 305	(3)	Animal Diversity
BIOL 308**	(3)	Ecological Dynamics
BIOL 310	(3)	Biodiversity and Ecosystems
BIOL 342	(3)	Marine Biology
BIOL 418	(3)	Freshwater Invertebrate Ecology
BIOL 432**	(3)	Limnology
BIOL 436	(3)	Evolution and Society
BIOL 465	(3)	Conservation Biology
BREE 217	(3)	Hydrology and Water Resources
BREE 322	(3)	Organic Waste Management
BREE 518	(3)	Bio-Treatment of Wastes
BTEC 502	(3)	Biotechnology Ethics and Society
CHEE 230	(3)	Environmental Aspects of Technology
CHEM 212	(4)	Introductory Organic Chemistry 1
CHEM 281	(3)	Inorganic Chemistry 1
CHEM 462	(3)	Green Chemistry
CIVE 225	(4)	Environmental Engineering
CIVE 323	(3)	Hydrology and Water Resources

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

it3)

PLNT 460	(3)	Plant Ecology
SOIL 300	(3)	Geosystems
WILD 421	(3)	Wildlife Conservation

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

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

Advising Note:

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

For information about the Minor in Environment, contact:

Ms. Kathy Roulet, MSE Program Adviser

Email: kathy.roulet@mcgill.ca

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

ENVR 200	(3)	The Global Environment
		Society, Environment and Sustainabilit922 Tm(, En)Tj1 0 ,Y3)

AGEC 442	(3)	Economics of International Agricultural Development
AGRI 210	(3)	Agro-Ecological History
AGRI 411	(3)	Global Issues on Development, Food and Agriculture
ANTH 206	(3)	Environment and Culture
ANTH 212	(3)	Anthropology of Development
ANTH 339	(3)	Ecological Anthropology
ANTH 512	(3)	Political Ecology
BREE 503	(3)	Water: Society, Law and Policy
CIVE 433	(3)	Urban Planning
ECON 205	(3)	An Introduction to Political Economy
ECON 225	(3)	Economics of the Environment
ECON 326	(3)	Ecological Economics
ECON 347	(3)	Economics of Climate Change
ECON 405	(3)	Natural Resource Economics
ENVB 437	(3)	Assessing Environmental Impact
ENVR 201	(3)	Society, Environment and Sustainability
ENVR 203	(3)	Knowledge, Ethics and Environment
ENVR 400	(3)	Environmental Thought
GEOG 200	(3)	Geographical Perspectives: World Environmental Problems
GEOG 210	(3)	Global Places and Peoples
GEOG 216	(3)	Geography of the World Economy
GEOG 221	(3)	Environment and Health
GEOG 300	(3)	Human Ecology in Geography
GEOG 301	(3)	Geography of Nunavut
GEOG 302	(3)	Environmental Management 1
GEOG 303	(3)	Health Geography
GEOG 370	(3)	Protected Areas
GEOG 382	(3)	Principles Earth Citizenship
GEOG 403	(3)	Global Health and Environmental Change
GEOG 408	(3)	Geography of Development
GEOG 410	(3)	Geography of Underdevelopment: Current Problems
GEOG 530	(3)	Global Land and Water Resources
GEOG 551	(3)	Environmental Decisions
MGPO 440	(3)	Strategies for Sustainability
NRSC 221	(3)	Environment and Health
NRSC 540	(3)	Socio-Cultural Issues in Water
PHIL 230	(3)	Introduction to Moral Philosophy 1
PHIL 237	(3)	Contemporary Moral Issues
PHIL 334	(3)	Ethical Theory
PHIL 343	(3)	Biomedical Ethics
PHIL 348	(3)	Philosophy of Law 1
POLI 211	(3)	Comparative Government and Politics
POLI 212	(3)	Government and Politics - Developed World

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

Natural Sciences and Technology

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

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

CHEM 212	(4)	Introductory Organic Chemistry 1
CHEM 281	(3)	Inorganic Chemistry 1
CHEM 462	(3)	Green Chemistry
CIVE 225	(4)	Environmental Engineering
CIVE 323	(3)	Hydrology and Water Resources
CIVE 550	(3)	Water Resources Management
ENTO 340	(3)	Field Entomology
ENVB 210	(3)	The Biophysical Environment
ENVB 301	(3)	Meteorology
ENVB 305*	(3)	Population & Community Ecology
ENVB 315*	(3)	Science of Inland Waters
ENVB 410	(3)	Ecosystem Ecology
ENVB 415	(3)	Ecosystem Management
ENVB 430*	(3)	GIS for Natural Resource Management
ENVR 200	(3)	The Global Environment
ENVR 202	(3)	The Evolving Earth
EPSC 201	(3)	Understanding Planet Earth
EPSC 233	(3)	Earth and Life History
EPSC 425	(3)	Sediments to Sequences
EPSC 549	(3)	Hydrogeology
ESYS 301	(3)	Earth System Modelling
GEOG 200	(3)	Geographical Perspectives: World Environmental Problems
GEOG 201*	(3)	Introductory Geo-Information Science
GEOG 205	(3)	Global Change: Past, Present and Future
GEOG 272	(3)	Earth's Changing Surface
GEOG 308	(3)	Principles of Remote Sensing
GEOG 321	(3)	Climatic Environments
GEOG 322*	(3)	Environmental Hydrology
GEOG 372	(3)	Running Water Environments
GEOG 470	(3)	Wetlands
LSCI 230*	(3)	Introductory Microbiology
MICR 331	(3)	Microbial Ecology
MIME 308	(3)	Social Impact of Technology
MIME 320	(3)	Extraction of Energy Resources
MIMM 211*	(3)	Introductory Microbiology
MIMM 214	(3)	Introductory Immunology: Elements of Immunity
MIMM 323	(3)	Microbial Physiology
MIMM 324	(3)	Fundamental Virology
NRSC 333	(3)	Pollution and Bioremediation
NRSC 340	(3)	Global Perspectives on Food
NRSC 510	(3)	Agricultural Micrometeorology
NRSC 514	(3)	Freshwater Ecosystems
PARA 410	(3)	Environment and Infection

PARA 515	(3)	Water, Health and Sanitation
PLNT 304	(3)	Biology of Fungi
PLNT 305	(3)	Plant Pathology
PLNT 358	(3)	Flowering Plant Diversity
PLNT 426	(3)	Plant Ecophysiology
PLNT 460	(3)	Plant Ecology
SOIL 300	(3)	Geosystems
WILD 421	(3)	Wildlife Conservation

9 B.A. Faculty Program in Environment

The B.A. Faculty Program has two components: Core and Domain. Students follo

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

To graduate from the Faculty Program in Environment, students are required to complete these courses by the end of their U1 year. These courses can be taken using the Satisfactory/Unsatisfactory option. See: http://www.mcgill.ca/study/university_regulations_and_resources/undergraduate/gi_courses_taken_under_the_satisfactory_unsatisfactory_option for details.

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):

		General Biology

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

9 credits from List A

6 credits from List B

Fundamentals:

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

Health and Environment

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

Health and Infection

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

Health and Pollution

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

Economics

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

Nutrition

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

Statistics

One of the following Statistics courses or equivalent:

Note: Credit given for Statistics courses is subject to certain restrictions. Students should consult the "Course 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
SOCI 350	(3)	Statistics in Social Research

List A:

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

Health and Society

ANTH 320	(3)	Social Evolution
GEOG 303	(3)	Health Geography

SOCI 225	(3)	Medicine and Health in Modern Society
SOCI 234	(3)	Population and Society
SOCI 309	(3)	Health and Illness
SOCI 515	(3)	Medicine and Society

Hydrology and Climate

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

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

Agriculture

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

Decision Making

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

Biology Fundamentals:

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

GEOG 310	(3)	Development and Livelihoods
SOCI 254	(3)	Development and Underdevelopment
SOCI 365	(3)	Health and Development

List B:

6 credits from List B (maximum 3 credits from any one category):

Advanced Ecology

* You may take BIOL 465 or WILD 421, but not both.

AEBI 421	(3)	Tropical Horticultural Ecology
BIOL 451	(3)	Research in Ecology and Development in Africa ConOL 451

MIMM 413	(3)	Parasitology
PARA 438	(3)	Immunology
PATH 300	(3)	Human Disease
WILD 424	(3)	Parasitology

Populations and Place

ANTH 451	(3)	Research in Society and Development in Africa
CANS 407	(3)	Regions of Canada
EDKP 204	(3)	Health Education
GEOG 451	(3)	Research in Society and Development in Africa
GEOG 498	(3)	Humans in Tropical Environments
HIST 335	(3)	Science and Medicine in Canada
HIST 510	(3)	Environmental History of Latin America (Field)

MATH 140	(3)	Calculus 1

Basic Science

3 credits of Basic Science, one of the following, or their equivalents (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

Other Suggested First Year (U1) Courses

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

Program Requirements

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 corequisites listed above.

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

Core: Required Courses (18 credits)

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

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

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

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

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

Domain: Required Courses (15 credits)

ECON 230D1	(3)	Microeconomic Theory
ECON 230D2	(3)	Microeconomic Theory
ECON 405	(3)	Natural Resource Economics
EPSC 210	(3)	Introductory Mineralogy
EPSC 212	(3)	Introductory Petrology

Domain: Complementary Courses (18 credits)

18 credits are selected from various categories as follows:

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
GEOG 202	(3)	Statistics and Spatial Analysis
MATH 203	(3)	Principles of Statistics 1

Economics

6 credits from:

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

Advanced Courses

9 credits from:

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

AEBI 423	(3)	Sustainable Land Use
AGRI 435	(3)	Soil and Water Quality Management
AGRI 452	(3)	Water Resources in Barbados
AGRI 550	(3)	Sustained Tropical Agriculture
ANTH 339	(3)	Ecological Anthropology
ANTH 451	(3)	Research in Society and Development in Africa
BIOL 305	(3)	Animal Diversity
BIOL 308*	(3)	Ecological Dynamics
BIOL 451	(3)	Research in Ecology and Development in Africa
BREE 217*	(3)	Hydrology and Water Resources
ECON 305	(3)	Industrial Organization
ECON 313	(3)	Economic Development 1
ECON 314	(3)	Economic Development 2
ECON 408	(3)	Public Sector Economics 1
ECON 409	(3)	Public Sector Economics 2
ENVB 305*	(3)	Population & Community Ecology
ENVB 437	(3)	Assessing Environmental Impact
EPSC 355	(3)	Sedimentary Geology
EPSC 549	(3)	Hydrogeology
GEOG 302	(3)	Environmental Management 1
GEOG 322*	(3)	Environmental Hydrology
GEOG 404	(3)	Environmental Management 2
GEOG 451*	(3)	Research in Society and Development in Africa

GEOG 498	(3)	Humans in Tropical Environments
HIST 510	(3)	Environmental History of Latin America (Field)
NRSC 451	(3)	Research in Ecology and Development In Africa
SOIL 510	(3)	Environmental Soil Chemistry
URBP 507	(3)	Planning and Infrastructure
URBP 520	(3)	Globalization: Planning and Change

9.3 Environment and Development Domain

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

Adviser	Mentor
Ms. Kathy Roulet Telephone: 514-398-4306 Email: *kathy.roulet@mcgill.ca*	Prof. Gregory Mikkelson Telephone: 514-398-4583 Email: *gregory.mikkelson@mcgill.ca*

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

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

Program Prerequisites or Corequisites

To graduate from the Faculty Program in Environment, students are required to complete these courses by the end of their U1 year. These courses can be taken using the Satisfactory/Unsatisfactory option. See: http://www.mcgill.ca/study/university_regulations_and_resources/undergraduate/gi_courses_taken_under_the_satisfactory_unsatisfactory_option for details.

Calculus

3 credits of calculus from the following, or equivalent (e.g., CEGEP objective Std No.):

MA	(4)	Calculus 1 with Precalculus

Core: Required Courses (18 credits)

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

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

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

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

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

Domain: Required Courses (12 credits)

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

Domain: Complementary Courses (21 credits)

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

Microeconomics

One of:

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

Statistics

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

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

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

Advanced Development Courses

6 credits from:

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

Natural Sciences

3 credits from:

* Note: You may take BIOL 308 or ENVB 305 but not both; you may take BIOL 465 or WILD 421 but not both; you may take ENVB 210 or GEOG 305 but not both; you may take BREE 217 or GEOG 322 but not both.

AEBI 421	(3)	Tropical Horticultural Ecology
AGRI 550	(3)	Sustained Tropical Agriculture
BIOL 308*	(3)	Ecological Dynamics
BIOL 451	(3)	Research in Ecology and Development in Africa
BIOL 465*	(3)	Conservation Biology
BIOL 553	(3)	Neotropical Environments
BREE 217*	(3)	Hydrology and Water Resources
ENVB 210*	(3)	The Biophysical Environment
ENVB 305	(3)	Population & Community Ecology
GEOG 305*	(3)	Soils and Environment
GEOG 322*	(3)	Environmental Hydrology
NRSC 451	(3)	Research in Ecology and Development In Africa
NUTR 403	(3)	Nutrition in Society
NUTR 501	(3)	Nutrition in Developing Countries
PARA 410	(3)	Environment and Infection
WILD 421*	(3)	Wildlife Conservation

Social Sciences

6 credits from:

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

AEBI 423	(3)	Sustainable Land Use
AEBI 425	(3)	Tropical Energy and Food
AGEC 333	(3)	Resource Economics
AGRI 452	(3)	Water Resources in Barbados
ANTH 451	(3)	Research in Society and Development in Africa

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GEOG 300	(3)	Human Ecology in Geography
GEOG 311	(3)	Economic Geography
GEOG 331	(3)	Urban Social Geography
GEOG 404	(3)	Environmental Management 2
GEOG 406	(3)	Human Dimensions of Climate Change
GEOG 416	(3)	Africa South of the Sahara
GEOG 451	(3)	Research in Society and Development in Africa
GEOG 496	(3)	Geographical Excursion
GEOG 498	(3)	Humans in Tropical Environments
GEOG 510	(3)	Humid Tropical Environments
GEOG 514	(3)	Climate Change Vulnerability and Adaptation
HIST 510	(3)	Environmental History of Latin America (Field)
MGPO 440	(3)	Strategies for Sustainability
NRSC 221*	(3)	Environment and Health
POLI 445	(3)	International Political Economy: Monetary Relations
URBP 507	(3)	Planning and Infrastructure

10 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.

Adviser

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

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 toward the Interfaculty Program with a grade of C or higher;
- confirm that their course selection satisfies the required components of the program;
- fulfil all requirements specified for the B.A. & Sc. in *Programs, Courses and University Regulations > Faculties & Schools > Bachelor of Arts and Science > Undergraduate > : Degree Requirements*, which include meeting the minimum credit requirement as specified in their letter of admission.

10.1 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 face the myriad of environmental problems that currently need to be addressed.

Program Requirements

1. Students are required to take a maximum of 21 credits at the 200 level and a minimum of 12 credits at the 400 level or higher in this program. This includes required courses.

2. Students must complete at least 21 credits in the Faculty of Arts and at least 21 in the Faculty of Science as part of their interfaculty program and their minor or minor concentration. ENVR courses are considered courses in both Arts and Science, and so the credits are split between the two faculties for the purpose of this regulation.

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 on both McGill's Downtown campus and at the Macdonald campus in Sainte-Anne-de-Bellevue.

Required Courses (18 credits)

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

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

Complementary Courses (36 credits)

36 credits of complementary courses are selected as follows:

3 credits - Senior Research Project

3 credits - Statistics

30 credits - chosen from amongst 12 Areas of focus

Senior Research Project

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

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

Statistics:

One of:

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

Areas:

30 credits from at least three of the following Areas. At least 6 credits must be at the 400 level or higher, selected either from these lists or in consultationhHe y5 M84m

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
		Economics of Climate Change

Area 11: Spirituality, Philosophy, and Thought

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

Area 12: Environmental Management

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

AGRI 210	(3)	Agro-Ecological History
AGRI 435	(3)	Soil and Water Quality Management
AGRI 452	(3)	Water Resources in Barbados
ENVB 437	(3)	Assessing Environmental Impact
GEOG 302	(3)	Environmental Management 1
GEOG 404	(3)	Environmental Management 2
NRSC 333	(3)	Pollution and Bioremediation
SOIL 335	(3)	Soil Ecology and Management
		Fisheries and

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

11.1 Biodiversity and Conservation Domain

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

Adviser	Mentor
Ms. Kathy Roulet Telephone: 514-398-4306 Email: *kathy.roulet@mcgill.ca*	Professor Graham Bell Telephone: 514-398-6485 Email: *graham.bell@mcgill.ca*

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

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

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

Suggested First Year (U1) Courses

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

Program Requirements

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

Ecology:

One of:

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

Statistics:

One of:

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

Science, Policy, and Management:

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

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

AGEC 200*	(3)	Principles of Microeconomics
		Sustained Trop 0 1 1n0 1Tj1 0tcf Microecono1riculturenomics

BIOL 432**	(3)	Limnology
BIOL 441	(3)	Biological Oceanography
ENVB 313	(3)	Phylogeny and Biogeography
ENVB 315**	(3)	Science of Inland Waters
ENVB 410	(3)	Ecosystem Ecology
ENVB 430*	(3)	GIS for Natural Resource Management
ENVB 437	(3)	Assessing Environmental Impact
GEOG 272	(3)	Earth's Changing Surface
GEOG 306*	(3)	Raster Geo-Information Science
GEOG 321	(3)	Climatic Environments
GEOG 322	(3)	Environmental Hydrology
GEOG 350	(3)	Ecological Biogeography
MICR 331	(3)	Microbial Ecology
PLNT 460	(3)	Plant Ecology
WILD 311	(3)	Ethology
WOOD 420	(3)	Environmental Issues: Forestry

Social Science:

One of:

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

AGEC 333	(3)	Resource Economics
ANTH 339	(3)	Ecological Anthropology
ANTH 416	(3)	Environment/Development: Africa
ECON 326	(3)	Ecological Economics
GEOG 404	(3)	Environmental Management 2
GEOG 498	(3)	Humans in Tropical Environments
GEOG 510	(3)	Humid Tropical Environments
URBP 520	(3)	Globalization: Planning and Change
WILD 415*	(2)	Conservation Law

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)	Biocontrol of Pest Insects
ENTO 440	(3)	Insect Diversity

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

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

Cellular Biology

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

Genetics

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

Molecular Biology

BIOL 200	(3)	Molecular Biology

LSCI 211	(3)	Biochemistry 1

Statistics

One of the following Statistics courses or equivalent:

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

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

Nutrition

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

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

Human Health:

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

Immunology and Pathogenicity

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

Infectious Disease

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

Nutrition

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

Drugs and Hormones

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

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

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
ENVB 437	(3)	Assessing Environmental Impact
GEOG 302	(3)	Environmental Management 1
URBP 507	(3)	Planning and Infrastructure

Pest Management

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

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

Pollution Control and Management

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

Ecology

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

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

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

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

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

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

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

Suggested First Year (U1) Courses

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

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 should v

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

Health and Society

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

Toxicology

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

Biology

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

Statistics

One of the following Statistics courses or equivalent:

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

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

Nutrition

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

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

Advanced Ecology

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

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

List A:

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

Hydrology, Climate, and Agriculture

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

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

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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

3 credits - Basic Environmental Science

6 credits - Statistics, one of two options

15 credits - List 1 and List 2

Fundamentals:

12 credits of Fundamentals, 3 credits from each category.

Ecology

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

Impact

ENVB 437	(3)	Assessing Environmental Impact
MIME 308	(3)	Social Impact of Technology

Modelling

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

GIS Techniques

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

Basic Environmental Science:

One of:

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

Statistics:

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

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

Option 1

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

Option 2

One of:

WOOD 420	(3)	Environmental Issues: Forestry

11.4 Food Production and Environment Domain

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

Adviser	Mentor
Ms. Kathy Roulet Telephone: 514-398-4306 Email: *kathy.roulet@mcgill.ca*	Professor Caroline Begg Telephone: 514-398-8749 Email: *caroline.begg@mcgill.ca*

11.4.1 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)

Revision, August 2013. Start of revision.

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 programs.

The business of food production is an area of human activity with a large and intimate interaction with the environment. As the global population rises, demand for food and food production increases. This demand must be met through a combination of increased productivity of existing agricultural land and by bringing new arable land into production. This is a serious challenge for two main reasons. Firstly, there are environmental impacts of agricultural activities which can be significant and which can be difficult to assess and contain, as the effects range from loss of biodiversity due to increasing farm size, production of biofuels versus food, non-point source pollution of rivers and lakes, and a loss of arable land to urbanization. Secondly, a growing population needs support from a number of different land uses (e.g., urban growth, transportation, water resource use, timber resources, etc.), many of which conflict, and all of which compete with food production land requirements. As the available land resource decreases, land-use competition for what remains will grow more fierce, making the need for smart and informed decision-making related to food production increasingly critical.

Program Prerequisites or Corequisites

All students in this program MUST take these pre- or corequisite courses, or their equivalents. These courses are taken as follows:

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

BIOL 112	(3)	Cell and Molecular Biology
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 2013-2014" available on the MSE website (http://www.mcgill.ca/mse), or contact Ms. Kathy Roulet, the Program Adviser (kathy.roulet@mcgill.ca).

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

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 corequisites listed above.

Core: Required Courses (18 credits)

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

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

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

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

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

Domain: Required Courses (6 credits)

AEBI 210	(3)	Organisms 1
AGRI 340	(3)	Principles of Ecological Agriculture

Domain: Complementary Courses (36 credits)

36 credits of complementary courses selected as follows:

18 credits - Fundamentals

12 credits - Applied Sciences

6 credits - Social Sciences/Humanities

The Applied and Social Sciences courses are grouped according to subtopics. Students can choose their courses from one subtopic, or a combination of subtopics.

Fundamentals (18 credits)

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:

ANSC 250	(3)	Principles of Animal Science
PLNT 300	(3)	Cropping Systems

One of:

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

One of:

ENVB 210	(3)	The Biophysical Environment
		Soils and Environment

AGRI 435	(3)	Soil and Water Quality Management
AGRI 452	(3)	Water Resources in Barbados
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
GEOG 322**	(3)	Environmental Hydrology
NRSC 333	(3)	Pollution and Bioremediation
SOIL 510	(3)	Environmental Soil Chemistry
WILD 401	(4)	Fisheries and Wildlife Management
WILD 421*	(3)	Wildlife Conservation

Social Science (6 credits)

Economic and Resource Policy

* Note: Students take AGEC 333 or ECON 405, but not both.

AGEC 320	(3)	Intermediate Microeconomic Theory
AGEC 333*	(3)	Resource Economics
AGEC 430	(3)	Agriculture, Food and Resource Policy
AGEC 442	(3)	Economics of International Agricultural Development
ECON 225	(3)	Economics of the Environment
ECON 405*	(3)	Natural Resource Economics

Social Change and Human Impacts

GEOG 406	(3)	Human Dimensions of Climate Change
GEOG 410	(3)	Geography of Underdevelopment: Current Problems
GEOG 498	(3)	Humans in Tropical Environments
GEOG 510	(3)	Humid Tropical Environments
HIST 510	(3)	Environmental History of Latin America (Field)
SOCI 254	(3)	Development and Underdevelopment

Environment Management

* Note: Students may take only one of BREE 430, ENVB 430, or GEOG 201.

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

AEBI 423	(3)	Sustainable Land Use
BREE 430*	(3)	GIS for Natural Resource Management
ENVB 430*	(3)	GIS for Natural Resource Management
ENVB 437	(3)	Assessing Environmental Impact
GEOG 201*	(3)	Introductory Geo-Information Science
GEOG 302	(3)	Environmental Management 1
GEOG 404	(3)	Environmental Management 2
GEOG 530	(3)	Global Land and Water Resources

MGPO 440	(3)	Strategies for Sustainability
WILD 415**	(2)	Conservation Law

Revision, August 2013. End of revision.

11.5 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.

Adviser	Mentor
Ms. Kathy Roulet Telephone: 514-398-4306 Email: *kathy.roulet@mcgill.ca*	Professor Ian Strachan Telephone: 514-398-7935 Email: *ian.strachan@mcgill.ca*

11.5.1 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 programs.

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 2013-2014" available on the MSE website (http://www.mcgill.ca/mse), or contact Ms. Kathy Roulet, the Program Adviser (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 Sainte-Anne-de-Bellevue.

Core: Required Courses (18 credits)

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

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

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

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

AGRI 519	(6)	Sustainable Development Plans

(3) Environmental Research

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:

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

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
ENVB 437	(3)	Assessing Environmental Impact
ESYS 301	(3)	Earth System Modelling
GEOG 302	(3)	Environmental Management 1
GEOG 404	(3)	Environmental Management 2
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
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
NRSC 221	(3)	Environment and Health
SOCI 565	(3)	Social Change in Panama
URBP 520	(3)	Globalization: Planning and Change

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

List A - Particular Environments:

3-9 credits of advanced study of Particular Environments:

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

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:

3-9 credits advanced study of Surface Processes:

ATOC 315	(3)	Thermodynamics and Convection
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 537	(3)	Advanced Fluvial Geomorphology
NRSC 333	(3)	Pollution and Bioremediation
SOIL 331	(3)	Soil Physics
SOIL 510	(3)	Environmental Soil Chemistry

11.6 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.

Adviser	Mentor
Ms. Kathy Roulet, MSE Program Adviser Telephone: 514-398-4306 Email: *kathy.roulet@mcgill.ca*	Professor Joann Whalen Telephone: 514-398-7943 Email: *joann.whalen@mcgill.ca*

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

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

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

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

Program Prerequisites or Corequisites

All students in this program MUST take the following pre- or corequisite courses:

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

BIOL 112	(3)	Cell and Molecular Biology
LSCI 211	(3)	Biochemistry 1

One of the following chemistry 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 2013-2014" available on the MSE website (http://www.mcgill.ca/mse), or contact Ms. Kathy Roulet, the Program Adviser (kathy.roulet@mcgill.ca).

Program Requirements

Note: Students are required to take a maximum of 30 credits at the 200 level and a minimum of 12 credits at the 400 level or higher in this program. This includes core and required courses, but does not include the domain prerequisites or corequisites 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 are taught at both McGill's Downtown campus and at the Macdonald campus in Sainte-Anne-de-Bellevue.

Core: Required Courses (18 credits)

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

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

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

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

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 Principles of Ecosystem Processes and Diversity

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

6 credits - Advanced Ecosystem Components

6 credits - Advanced Ecological Processes

6 credits - Social Processes

9 credits - Ecosystem Components or Management of Ecosystems

Basic Principles of Ecosystem Processes:

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

One of:

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

One of:

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

One of:

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

Statistics

One of:

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

GIS Methods

One of:

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

Advanced Ecosystem Components:

6 credits of advanced ecosystem components selected from:

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

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

Advanced Ecological Processes:

6 credits of advanced ecological processes selected from:

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

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

Social Processes:

6 credits of social processes selected as follows:

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

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

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

Ecosystem Components or Management of Ecosystems:

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

AGRI 435	(3)	Soil and Water Quality Management
AGRI 452	(3)	Water Resources in Barbados
AGRI 550	(3)	Sustained Tropical Agriculture
ENVB 437	(3)	Assessing Environmental Impact
		Environmental Management 1

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

11.7 Water Environments and Ecosystems Domain

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

Water Environments and Ecosystems – Biological

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

Water Environments and Ecosystems – Physical

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

11.7.1 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

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

6-9 credits chosen from:

* Note: you may take AT

ENVR 400	(3)	Environmental Thought

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

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

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

Domain: Required Courses (12 credits)

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

Domain: Complementary Courses (30 credits)

30 credits of complementary courses are selected as follows:

6 credits - Hydrology/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:

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

And/or one of:

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

And/or one of:

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

And/or one of:

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

And/or one of:

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

List B:

6 credits chosen from:

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

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

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

12 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 11: 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.

12.1 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.

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

The rapid expansion of industrialization has been accompanied by 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 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.

Suggested First Year (U1) Courses

For suggestions on courses to take in your first year (U1), you can consult the "MSE Student Handbook 2013-2014" available on the MSE website (http://www.mcgill.ca/mse).

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

Core: Required Courses

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

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

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

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

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 ATOC 219 or CHEM 219, but not both.

ATOC 214	(3)	Introduction: Physics of the Atmosphere
ATOC 215	(3)	Oceans, Weather and Climate
ATOC 219*	(3)	Introduction to Atmospheric Chemistry
ATOC 315	(3)	Thermodynamics and Convection
CHEM 219*	(3)	Introduction to Atmospheric Chemistry

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

Math or Physical Science:

9 credits of Math or Physical Science (at least 6 credits of which are at the 300 level or above):

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

AEMA 305*	(3)	Differential Equations
ATOC 309	(3)	Weather Radars and Satellites
ATOC 412	(3)	Atmospheric Dynamics
		Adv

12.2.1 Bachelor of Science (B.Sc.) - Major Environment - Earth Sciences and Economics (66 credits)

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:

AGEC 333	(3)	Resource Economics
ECON 326	(3)	Ecological Economics
ECON 347	(3)	Economics of Climate Change
ECON 416	(3)	Topics in Economic Development 2
ECON 525	(3)	Project Analysis
ENVB 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
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
EPSC 580	(3)	Aqueous Geochemistry
EPSC 590	(3)	Applied Geochemistry Seminar
GEOG 302	(3)	Environmental Management 1

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

13 Honours Program in Environment

Adviser

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

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

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

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

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

In addition, students must satisfy the following:

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

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

3. Students must earn a B grade (3.0) or higher for the Honours Research course (ENVR 495).

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

5. Arts (B.A.) students in the Honours Environment program must also complete a minor concentration in an academic unit other than the McGill School of Environment. Please refer to the Faculty of Arts regulations on Honours programs found under "Faculty Degree Requirements", "About Program Requirements" and "Departmental Programs".

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

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

Honours Required Courses (6 credits)

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

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

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

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

In addition, students must satisfy the following:

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

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

3. Students must earn a B grade (3.0) or higher for the Honours Research course (ENVR 495).

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

Students in the B.Sc. Honours programs complete the core and domain courses (60 to 66 credits) according to their chosen domain as well as the 6 credits of Honours required courses.

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

Honours Required Courses (6 credits)

Note: you tak

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

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

In addition, students must satisfy the following:

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

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

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

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

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

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

Honours - Required Courses (6 credits)

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

14 Joint Honours Component Environment

Adviser

Ms. Kathy Roulet, MSE Program Adviser
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Email: *kathy.roulet@mcgill.ca*

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

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

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

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

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

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

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

Program Prerequisites or Corequisites

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

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

BIOL 111	(3)	Principles: Organismal Biology

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

And one of the following:

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

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

Required Courses (27 credits)

21 credits of Environment core courses as follows:

ENVR 200	(3)	The Global Environment
		Society, Environment and Sustainabi7248 543.261 TNent core courses as follo

15.1 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.

Advising Note:

Consultation with the Program Adviser for approval of course selection to meet program requirements is obligatory. All courses must be at the 200 level and above, and completed with a grade of C or better.

Location

ANTH 206	(3)	Environment and Culture
ANTH 212	(3)	Anthropology of Development
ANTH 339	(3)	Ecological Anthropology
ANTH 512	(3)	Political Ecology
BREE 503	(3)	Water: Society, Law and Policy
CIVE 433	(3)	Urban Planning
ECON 205	(3)	An Introduction to Political Economy
ECON 225	(3)	Economics of the Environment
ECON 326	(3)	Ecological Economics
ECON 347	(3)	Economics of Climate Change
ECON 405	(3)	Natural Resource Economics
ENVB 437	(3)	Assessing Environmental Impact
ENVR 201	(3)	Society, Environment and Sustainability
ENVR 203	(3)	Knowledge, Ethics and Environment
ENVR 400	(3)	Environmental Thought
GEOG 200	(3)	Geographical Perspectives: World Environmental Problems
GEOG 210	(3)	Global Places and Peoples
GEOG 216	(3)	Geography of the World Economy
GEOG 221	(3)	Environment and Health
GEOG 300	(3)	Human Ecology in Geography
GEOG 301	(3)	Geography of Nunavut
GEOG 302	(3)	Environmental Management 1
GEOG 303	(3)	Health Geography
GEOG 370	(3)	Protected Areas
GEOG 382	(3)	Principles Earth Citizenship
GEOG 403	(3)	Global Health and Environmental Change
GEOG 408	(3)	Geography of Development
GEOG 410	(3)	Geography of Underdevelopment: Current Problems
GEOG 530	(3)	Global Land and Water Resources
GEOG 551	(3)	Environmental Decisions
MGPO 440	(3)	Strategies for Sustainability
NRSC 221	(3)	Environment and Health
NRSC 540	(3)	Socio-Cultural Issues in Water
PHIL 230	(3)	Introduction to Moral Philosophy 1
PHIL 237	(3)	Contemporary Moral Issues
PHIL 334	(3)	Ethical Theory
PHIL 343	(3)	Biomedical Ethics
PHIL 348	(3)	Philosophy of Law 1
POLI 211	(3)	Comparative Government and Politics

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

Natural Sciences and Technology

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

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

CIVE 225	(4)	Environmental Engineering
CIVE 323	(3)	Hydrology and Water Resources
CIVE 550	(3)	Water Resources Management
ENTO 340	(3)	Field Entomology
ENVB 210	(3)	The Biophysical Environment
ENVB 301	(3)	Meteorology
ENVB 305	(3)	Population & Community Ecology
ENVB 315*	(3)	Science of Inland Waters
ENVB 410	(3)	Ecosystem Ecology
ENVB 415	(3)	Ecosystem Management
ENVB 430*	(3)	GIS for Natural Resource Management
ENVR 200	(3)	The Global Environment
ENVR 202	(3)	The Evolving Earth
EPSC 201	(3)	Understanding Planet Earth
EPSC 233	(3)	Earth and Life History
EPSC 425	(3)	Sediments to Sequences
EPSC 549	(3)	Hydrogeology
ESYS 301	(3)	Earth System Modelling
GEOG 200	(3)	Geographical Perspectives: World Environmental Problems
GEOG 201*	(3)	Introductory Geo-Information Science
GEOG 205	(3)	Global Change: Past, Present and Future
GEOG 272	(3)	Earth's Changing Surface
GEOG 308	(3)	Principles of Remote Sensing
GEOG 321	(3)	Climatic Environments
GEOG 322*	(3)	Environmental Hydrology
GEOG 372	(3)	Running Water Environments
GEOG 470	(3)	Wetlands
LSCI 230*	(3)	Introductory Microbiology
MICR 331	(3)	Microbial Ecology
MIME 308	(3)	Social Impact of Technology
MIME 320	(3)	Extraction of Energy Resources
MIMM 211*	(3)	Introductory Microbiology
MIMM 214	(3)	Introductory Immunology: Elements of Immunity
MIMM 323	(3)	Microbial Physiology
MIMM 324	(3)	Fundamental Virology
NRSC 333	(3)	Pollution and Bioremediation
NRSC 340	(3)	Global Perspectives on Food
NRSC 510	(3)	Agricultural Micrometeorology
NRSC 514	(3)	Freshwater Ecosystems
PARA 410	(3)	Environment and Infection
PARA 515	(3)	Water, Health and Sanitation
PLNT 304	(3)	Biology of Fungi
PLNT 305	(3)	Plant Pathology

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

16 Field Studies

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