



**Bieler School of Environment**  
**Programs, Courses and University Regulations**  
**2024-2025**



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

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## 1 About the Bieler School of Environment

McGill's faculties of Arts, of Science, and of Agricultural and Environmental Sciences, have forged a unique approach to the study of environment through the interfaculty, trans-disciplinary Bieler School of Environment. The rapid growth of technology, global economies, and global population have dramatic and significant environmental impacts that are felt locally and in the short-term as well as perturbations affecting large-scale global ecosystems felt over hundreds if not thousands of years. Solutions to the environmental challenges we face will come from an understanding of global ecosystems and the conflicting and complex ways in which human activities are intertwined with them. Studying environmental problems at the intersection of the natural environment and human-built world requires a depth and breadth of knowledge in both the social and natural sciences. The approach of the Bieler School of Environment programs is to introduce 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. The Bieler School attracts exceptional students able to comprehend and navigate the complex dynamics of environmental challenges and who are catalysts of change in their communities.

The mission of the Bieler 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.

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### 1.1 Location

For advising, contact:

Environment Program Advisor  
Telephone: 514-398-4306  
Fax: 514-398-1643  
Email: [advisor.environment@mcgill.ca](mailto:advisor.environment@mcgill.ca)  
Website: [mcgill.ca/environment](http://mcgill.ca/environment)

#### **Downtown Campus**

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

#### **Macdonald Campus**

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

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## 2 Admission, Registration, and Regulations

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

### **Admission, Registration, and Regulations**

[section 2.1: Admission](#)

[section 2.2: Degree Requirements](#)

[section 2.3: Important Information about Program Selection](#)

[section 2.4: Examination Regulations](#)

[section 2.5: Courses Outside the Student's Faculty](#)

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## 2.1 Admission

You may be admitted to a B.A., B.A. & Sc., B.Sc.(Ag.Env.Sc.), or B.Sc. program offered by the Bieler School of Environment on one of the University's two campuses: the Macdonald Campus (B.Sc.(Ag.Env.Sc.) program) and the Downtown Campus (B.A., B.A. & Sc., and B.Sc. programs). You register as a student within your faculty of admission and are governed by all rules and regulations of your faculty.

If you have already completed a bachelor or an equivalent degree, you may be admitted to the Diploma in Environment through the Faculty of Agricultural and Environmental Sciences, the Faculty of Arts, or the Faculty of Science. You register as a student within your faculty of admission and are governed by all rules and regulations of your faculty relative to the Diploma.

Please see the Undergraduate Admissions Guide, found at [mcgill.ca/applying](http://mcgill.ca/applying).

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## 2.2 Degree Requirements

To be eligible for a **B.A.** degree, you must fulfil all the faculty and program requirements as indicated in the [Degree Requirements for the Faculty of Arts](#).

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

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

To be eligible for a **B.Sc.** degree, you must fulfil all the faculty and program requirements as indicated in the [Degree Requirements for the Faculty of Science](#).

To be eligible for the **Diploma in Environment**, you must fulfil all program requirements as specified for the [Diploma in Environment](#).

To be eligible for an **Honours** degree, you must fulfil all the faculty and program requirements as indicated in the [Honours and First Class Honours](#) section under your home faculty. In addition, you must fulfil the honours program requirements outlined in the [Honours Program in Environment](#) section.

To be eligible for a **Joint Honours** degree, you must fulfil all the faculty and program requirements as detailed in the section on



- Faculty of Science students in particular should be aware that some courses are restricted and cannot be taken for credit. Refer to [Restrictions on courses outside the Faculty of Science](#) in the Faculty of Science's Undergraduate Handbook, or contact [SOU SA](#)
- Students in the Diploma of Environment follow the program as specified; see [section 5.7: Diploma Environment](#).

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### 3 Overview of Programs Offered

The Bieler School of Environment offers nine programs on the Downtown and Macdonald Campuses:

1. A **Minor (or Minor Concentration) in Environment** is open to all undergraduate students. For more information, see [section 5.1: 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 5.2: B.A. Faculty Program in Environment](#).
3. An **Interfaculty Program in Environment** leading to a B.A. & Sc. is open to students meeting the entrance requirements for the Bachelor of Arts and Science. For more information, see [section 5.3: Bachelor of Arts and Science \(B.A. & Sc.\) – Interfaculty Programs](#).
4. An **Interfaculty Program in Sustainability, Science and Society** leading to a B.A. and Sc. is offered by the Bieler School of Environment in partnership with the Department of Geography. It is open to students meeting the entrance requirements for the Bachelor of Arts and Science. For more information, see [Bachelor of Arts and Science > Undergraduate > Bachelor of Arts and Science \(B.A. & Sc.\) - Interfaculty Program in Sustainability, Science and Society \(54 credits\)](#).
5. A **Major Environment** leading to a B.Sc. (Ag.Env.Sc.) is open to students meeting the entrance requirements of the Faculty of Agricultural and Environmental Sciences. For more information, see [section 5.4: Major in Environment - B.Sc.\(Ag.Env.Sc.\) and B.Sc. .](#)
6. A **Major Environment** leading to a B.Sc. is open to students meeting the entrance requirements of the Faculty of Science. For more information, see [section 5.4: Major in Environment - B.Sc.\(Ag.Env.Sc.\) and B.Sc..](#)
7. An **Honours Program in Environment** is open to senior Environment students in the B.A., B.A. & Sc., B.Sc.(Ag.Env.Sc.) and B.Sc. degrees. For more information, see [section 5.5: Honours Environment](#).
8. A **Joint Honours Program in Environment** is open to senior Environment students in the B.A. degree. For more information, see [section 5.6.1: Bachelor of Arts 1 0 0 ection 5.6.1](#)

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## 5.1 Minor in Environment

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

Students, after consulting with their advisor in their Major program or Major Concentration, and the Environment Program Advisor, can declare their intention to do a Minor (or Minor Concentration) in Environment.

\* **Note:** Students in Arts, Law, and Management complete the **Minor Concentration Environment**. Students in Agricultural and Environmental Sciences, Engineering, and Science complete the **Minor Envir**

## **Social Sciences and Policy**

AGEC 231	(3)	Economic Systems of Agriculture
AGEC 333	(3)	Resource Economics
AGEC 430	(3)	Agriculture, Food and Resource Policy
AGEC 442	(3)	Economics of International Agricultural Development
AGRI 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 418	(3)	Environment and Development
ANTH 512	(3)	Political Ecology
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

PHIL 334	(3)	Ethical Theory
PHIL 341	(3)	Philosophy of Science 1
PHIL 343	(3)	Biomedical Ethics
PHIL 348	(3)	Philosophy of Law 1
POLI 212	(3)	Government and Politics - Developed World
POLI 227	(3)	Developing Areas/Introduction
POLI 345	(3)	International Organizations
POLI 350	(3)	Global Environmental Politics
POLI 412	(3)	Canadian Voting/Public Opinion
POLI 445	(3)	International Political Economy: Monetary Relations
POLI 474	(3)	Inequality and Development
PSYC 215	(3)	Social Psychology
RELG 270	(3)	Religious Ethics and the Environment
RELG 370	(3)	Religion and Human Rights
SOCI 222	(3)	Urban Sociology
SOCI 234	(3)	Population and Society
SOCI 235	(3)	Technology and Society
SOCI 254	(3)	Development and Underdevelopment
SOCI 307	(3)	Globalization
SOCI 365	(3)	Health and Development
SOCI 366	(3)	Neighborhoods and Inequality
SOCI 386	(3)	Contemporary Social Movements
URBP 201	(3)	Planning the 21st Century City
URBP 504	(3)	Planning for Active Transportation
URBP 506	(3)	Environmental Policy and Planning
URBP 530	(3)	Urban Infrastructure and Services in International Context
URBP 551	(3)	Urban Design and Planning
WCOM 314	(3)	Communicating Science

### **Natural Sciences and Technology**

\*\* Note: you may take LSCI 230 or MIMM 211, but not both; you may take ENVB 529 or GEOG 201, but not both; you may take one of BREE 217, CIVE 323 or GEOG 322; 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 COMP 202 or COMP 204, but not both; you may take EPSC 201 or EPSC 233, but not both.

AGRI 340	(3)	Principles of Ecological Agriculture
ANSC 326	(3)	Fundamentals of Population Genetics
	(3)	Primate Behaviour and Ecology

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 327	(3)	Bio-Environmental Engineering
BREE 518	(3)	Ecological Engineering
CHEM 212	(4)	Introductory Organic Chemistry 1
CHEM 281	(3)	Inorganic Chemistry 1
CIVE 225	(4)	Environmental Engineering
CIVE 323**	(3)	Hydrology and Water Resources
CIVE 550	(3)	Water Resources Management
COMP 202**	(3)	Foundations of Programming
COMP 204**	(3)	Computer Programming for Life Sciences
ENVB 210	(3)	The Biophysical Environment
ENVB 301	(3)	Meteorology
ENVB 305**	(3)	Population and Community Ecology
ENVB 410	(3)	Ecosystem Ecology
ENVB 415	(3)	Ecosystem Management
ENVB 529**	(3)	GIS for Natural Resource Management
ENVR 200	(3)	The Global Environment
ENVR 202	(3)	The Evolving Earth
ENVR 422	(3)	Montreal Urban Sustainability Analysis
EPSC 201**	(3)	Understanding Planet Earth
EPSC 233**	(3)	Earth and Life History
EPSC 549	(3)	Hydrogeology
ESYS 301	(3)	Earth System Modelling
FDSC 230	(4)	Organic Chemistry
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

Remote Sensing for Earth OI2xb206.8 Tm(Remote Sensing f0 0 1 165.864th's Ch06.8 Tm(Remote otSu((3))Tj1 0 0 1 70

MIMM 214	(3)	Introductory Immunology: Elements of Immunity
MIMM 323	(3)	Microbial Physiology
NRSC 333	(3)	Pollution and Bioremediation
PARA 410	(3)	Environment and Infection
PARA 515	(3)	Water, Health and Sanitation
PHYS 228	(3)	Energy and the Environment
PLNT 304	(3)	Biology of Fungi
PLNT 305	(3)	Plant Pathology
PLNT 358	(3)	Flowering Plant Diversity
PLNT 460	(3)	Plant Ecology
SOIL 300	(3)	Geosystems
WILD 302	(3)	Fish Ecology
WILD 421**	(3)	Wildlife Conservation

### 5.1.2 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, Law and Management. Students in Arts, Law and Management should complete the Minor Concentration Environment.

#### Advising Note:

Consultation with the Program Adviser for approval of course selection to meet program requirements is obligatory. No overlap is allowed between this program and the student's major program or concentration, or a second minor program.

For more information, contact:

Ms Kathy Roulet, Program Adviser

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

Telephone: 514-398-4306

#### Complementary Courses (18 credits)

18 credits of complementary courses, all of which must fall outside the discipline or field of the student's major program or concentration, and which must be 200-level or above, selected as follows:

12 credits of Bieler School of Environment core courses:

The core courses are taught at both campuses. You should register in Section 001 of an ENVR course that you plan to take on the Downtown campus, and in Section 051 of an ENVR course that you plan to take on the Macdonald campus.

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

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

#### Suggested Course List

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

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

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

Some courses on the Suggested Course List may be subject to other regulations (e.g., the Restricted Courses List for Faculty of Science students). If in doubt, ask the Program Adviser.

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

### Social Sciences and Policy

AGEC 231	(3)	Economic Systems of Agriculture
AGEC 333	(3)	Resource Economics
AGEC 430	(3)	Agriculture, Food and Resource Policy
AGEC 442	(3)	Economics of International Agricultural Development
AGRI 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 418	(3)	Environment and Development
ANTH 512	(3)	Political Ecology
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
EDER 494	(3)	Human Rights and Ethics in Practice
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
ENVR 421	(3)	Montreal: Environmental History and Sustainability
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 310	(3)	Development and Livelihoods
GEOG 370	(3)	Protected Areas
GEOG 403	(3)	Global Health and Environmental Change
GEOG 408	(3)	Geography of Development
GEOG 423	(3)	Dilemmas of Development
GEOG 530	(3)	Global Land and Water Resources
HIST 249	(3)	Health and the Healer in Western History

HIST 292	(3)	History and the Environment
NRSC 221	(3)	Environment and Health
PHIL 221	(3)	Introduction to History and Philosophy of Science 2
PHIL 230	(3)	Introduction to Moral Philosophy 1
PHIL 237	(3)	Contemporary Moral Issues
PHIL 334	(3)	Ethical Theory
PHIL 341	(3)	Philosophy of Science 1
PHIL 343	(3)	Biomedical Ethics
PHIL 348	(3)	Philosophy of Law 1
POLI 212	(3)	Government and Politics - Developed World
POLI 227	(3)	Developing Areas/Introduction
POLI 345	(3)	International Organizations
POLI 350	(3)	Global Environmental Politics
POLI 412	(3)	Canadian Voting/Public Opinion
POLI 445	(3)	International Political Economy: Monetary Relations
POLI 474	(3)	Inequality and Development
PSYC 215	(3)	Social Psychology
RELG 270	(3)	Religious Ethics and the Environment
RELG 370	(3)	Religion and Human Rights
SOCI 222	(3)	Urban Sociology
SOCI 234	(3)	Population and Society
SOCI 235	(3)	Technology and Society
SOCI 254	(3)	Development and Underdevelopment



BIOL 240	(3)	Monteregian Flora
BIOL 305	(3)	Animal Diversity
BIOL 308**	(3)	Ecological Dynamics
BIOL 310	(3)	Biodiversity and Ecosystems
BIOL 342	(3)	Global Change Biology of Aquatic Ecosystems
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 327	(3)	Bio-Environmental Engineering
BREE 518	(3)	Ecological Engineering
CHEM 212	(4)	Introductory Organic Chemistry 1
CHEM 281	(3)	Inorganic Chemistry 1
CIVE 225	(4)	Environmental Engineering
CIVE 323**	(3)	Hydrology and Water Resources
CIVE 550	(3)	Water Resources Management
COMP 202**	(3)	Foundations of Programming
COMP 204**	(3)	Computer Programming for Life Sciences
ENVB 210	(3)	The Biophysical Environment
ENVB 301	(3)	Meteorology
ENVB 305**	(3)	Population and Community Ecology
ENVB 410	(3)	Ecosystem Ecology
ENVB 415	(3)	Ecosystem Management
ENVB 529**	(3)	GIS for Natural Resource Management
ENVR 200	(3)	The Global Environment
ENVR 202	(3)	The Evolving Earth
ENVR 422	(3)	Montreal Urban Sustainability Analysis
EPSC 201**	(3)	Understanding Planet Earth
EPSC 233**	(3)	Earth and Life History
EPSC 549	(3)	Hydrogeology
ESYS 301	(3)	Earth System Modelling
FDSC 230	(4)	Organic Chemistry
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)	Remote Sensing for Earth Observation
GEOG 321	(3)	Climatic Environments
GEOG 322**	(3)	Environmental Hydrology
GEOG 372	(3)	Running Water Environments
GEOG 470	(3)	Wetlands

GEOG 550	(3)	Historical Ecology Techniques
LSCI 230**	(3)	Introductory Microbiology
MICR 331	(3)	Microbial Ecology
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
NRSC 333	(3)	Pollution and Bioremediation
PARA 410	(3)	Environment and Infection
PARA 515	(3)	Water, Health and Sanitation
PHYS 228	(3)	Energy and the Environment
PLNT 304	(3)	Biology of Fungi
PLNT 305	(3)	Plant Pathology
PLNT 358	(3)	Flowering Plant Diversity
PLNT 460	(3)	Plant Ecology
SOIL 300	(3)	Geosystems
WILD 302	(3)	Fish Ecology
WILD 421**	(3)	Wildlife Conservation

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## 5.2 B.A. Faculty Program in Environment

The B.A. Faculty Program comprises two course components: core and concentration.

**Core:** In the core component, the four introductory courses and an intermediate-level course expose students to different interdisciplinary perspectives, approaches, and world views to help them understand the complexity and conflicts that underlie most environmental problems. In the two senior-level courses of the core component, students will apply the general and specialized knowledge acquired through the rest of their program, to the analysis of a selection of contemporary environmental problems. Students will be challenged by the core program to look beyond the confines of their individual views of environment.

**Concentration:** In addition to the core program, students choose a concentration, a transdisciplinary study of a particular theme or component of the environment. The requirements and complementary course sets vary between Concentrations. You can choose to follow one of three concentrations within the B.A. Faculty Program in Environment:

- Ecological Determinants of Health in Society
- Economics and the Earth's Environment
- Environment and Development

To obtain a B.A. Faculty Program in Environment, students must:

- register in a Concentration online, using Minerva;
- satisfy the co- and/or prerequisites for the program (Numeracy [e.g., calculus] and a Basic Science course);
- pass all courses counted towards the Faculty Program with a **grade of C or higher**;
- confirm that their course selection satisfies the required components of the core and their chosen concentration, and that the Complementary courses are approved courses in their chosen Concentration; and
- fulfil all Faculty requirements as specified for the B.A. in *Faculty of Arts > Undergraduate > : Degree Requirements for the Faculty of Arts*, which include meeting the minimum credit requirement as specified in their letter of admission.

### 5.2.1 Ecological Determinants of Health in Society Concentration

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

we are to be successful in our efforts to assure health of individuals and societies in the future. Recognizing the key role that nutritional status plays in maintaining a healthy body, and the increasing importance of infection as a health risk linked intimately with the environment, this domain prepares students to contribute to the solution of problems of nutrition and infection by tying the relevant natural sciences to the social sciences.

### **Program Prerequisites or Corequisites**

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

### **Numeracy**

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

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

### **Basic Science**

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

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

**Sue. Rec 1 I63 Tf1 0 0 1n 0 67.52 467.11 TmeBuTm(AEBI 120)T4iology**

33 credits of complementary courses are chosen as follows:

6 credits of Health and Environment

SOCI 225	(3)	Medicine and Health in Modern Society
SOCI 234	(3)	Population and Society
SOCI 309	(3)	Health and Illness
SOCI 331	(3)	Population and Environment
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

### 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
NUTR 341	(3)	Global Food Security

### Decision Making

AGEC 333	(3)	Resource Economics
ECON 440	(3)	Health Economics
PHIL 343	(3)	Biomedical Ethics
RELG 270	(3)	Religious Ethics and the Environment

### Biology Fundamentals:

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

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

### Development and Ecology

ANTH 212	(3)	Anthropology of Development
ANTH 339	(3)	Ecological Anthropology
ANTH 512	(3)	Political Ecology
ENVR 421	(3)	Montreal: Environmental History and Sustainability
GEOG 300	(3)	Human Ecology in Geography
GEOG 310	(3)	Development and Livelihoods



\* Note: You may take MIMM 413 or WILD 424, but not both.

MIMM 214	(3)	Introductory Immunology: Elements of Immunity
MIMM 314	(3)	Intermediate Immunology
MIMM 324	(3)	Fundamental Virology
MIMM 413*	(3)	Parasitology
PARA 424*	(3)	Fundamental Parasitology
PARA 438	(3)	Immunology
PPHS 501	(3)	Population Health and Epidemiology

### Populations and Place

\* Note: You may take ANTH 451 or GEOG 451, but not both.

ANTH 451*	(3)	Research in Society and Development in Africa
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)
SOCI 520	(3)	Migration and Immigrant Groups
SOCI 525	(3)	Health Care Systems in Comparative Perspective
SOCI 550	(3)	Developing Societies

## 5.2.2 Economics and the Earth's Environment Concentration

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

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

Understanding Earth's geologic processes provides us with the knowledge to mitigate many of our society's environmental impacts due to resource extraction and waste disposal. This knowledge is not always enough, as economics often plays a controlling role in how we use and abuse our environment.

This domain educates students in the fundamentals of economics and Earth sciences. The fundamentals of economics are provided, as is their application to the effects of economic choices on Earth's environment. Examples of these applications include the economic effects of public policy toward resource industries and methods of waste disposal, and the potential effects of global warming on the global economy. Students also learn of minerals, rocks, soils, and waters that define much of Earth's environment and how these materials interact with each other and with the atmosphere. Courses in specific subdisciplines of Earth sciences combined with courses presenting a global vision of how the Earth and its environment operate provide the student with the necessary knowledge of geologic processes. Examples of this knowledge include the effects of mineral and energy extraction on the environment and how industrial waste interacts with solids and liquids in the environment. The Earth science and economics studies merge in the final year when the students apply what they have learned in the domain to current environmental issues.

#### Program Prerequisites or Corequisites

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

#### Numeracy

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

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

#### Basic Science

3 credits of Basic Science, one of the following, or their equivalents (e.g., CEGEP objectives Chemistry OOUL):

AECH 110	(4)	General Chemistry 1
CHEM 110	(4)	General Chemistry 1

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

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

### **Program Requirements**

Note: Students are required to take a maximum of 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 program pre-requisites or co-requisites listed above.

Location Note: When planning your schedule and re



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

**Economics**

6 credits from:

AGEC 333	(3)	Resource Economics
ECON 209	(3)	Macroeconomic Analysis and Applications
ECON 326	(3)	Ecological Economics
ECON 347	(3)	Economics of Climate Change
ECON 416	(3)	Topics in Economic Development 2
ECON 511	(3)	Energy, Economy and Environment

**Advanced Courses (9 credits)**

9 credits chosen from two areas:

**Area 1: Development/Environmental Management**

\* Note: You can take ENVB 529 or GEOG 201 but not both; you can take BIOL 451 or NRSC 451 but not both; you can take ANTH 451 or GEOG 451 but



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

### **Complementary Courses (24 credits)**

#### **Senior Research Project**

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

3 credits from:

AEBI 427	(6)	Barbados Interdisciplinary Project
ENVR 401	(3)	Environmental Research
ENVR 451	(6)	Research in Panama
FSCI 444	(6)	Barbados Research Project
GEOG 451	(3)	Research in Society and Development in Africa

#### **Microeconomics**

3 credits from:

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

#### **Statistics**

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

GEOG 514	(3)	Climate Change Vulnerability and Adaptation
GEOG 525	(3)	Asian Cities in the 21st Century

**Natural Sciences**

3 credits from:

\* Note: If chosen, you may take BIOL 308 or ENVB 305 ; you may take BIOL 465 or WILD 421; you may take ENVB 210 or GEOG 305; you may take BREE 217 or GEOG 322.

AEBI 421	(3)	Tropical Horticultural Ecology
AGRI 550	(3)	Sustained Tropical Agriculture
ATOC 341	(3)	Caribbean Climate and Weather
BIOL 308*	(3)	Ecological Dynamics
BIOL 343	(3)	Biodiversity in the Caribbean Research in Ecology and De

GEOG 340	(3)	Sustainability in the Caribbean
GEOG 404	(3)	Environmental Management 2
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
GEOG 530	(3)	Global Land and Water Resources
HIST 292	(3)	History and the Environment
HIST 510	(3)	Environmental History of Latin America (Field)
INTD 360	(3)	Environmental Challenges in Development
POLI 345	(3)	International Organizations
POLI 350	(3)	Global Environmental Politics
POLI 445	(3)	International Political Economy: Monetary Relations
SOCI 254	(3)	Development and Underdevelopment
SOCI 331	(3)	Population and Environment
WCOM 314	(3)	Communicating Science

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### 5.3 Bachelor of Arts and Science (B.A. & Sc.) – Interfaculty Programs

These interfaculty programs are open only to students in the B.A. & Sc. degree.

To obtain a **B.A. & Sc. Interfaculty Program in Environment** or a **B.A. & Sc. Interfaculty Program in Sustainability, Science and Society**

**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



NUTR 307	(3)	Metabolism and Human Nutrition
PARA 410	(3)	Environment and Infection
PATH 300	(3)	Human Disease
PHAR 303	(3)	Principles of Toxicology

**Area 6: Earth and Soil Sciences**

ATOC 215	(3)	Oceans, Weather and Climate
ATOC 341	(3)	Caribbean Climate and Weather
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 AGECE 200 or ECON 208, but not both.

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

**Area 8: Development and Underdevelopment**

ANTH 212	(3)	Anthropology of Development
ANTH 418	(3)	Environment and Development
ECON 313	(3)	Economic Development 1
ECON 314	(3)	Economic Development 2
GEOG 408	(3)	Geography of Development
GEOG 410	(3)	Geography of Underdevelopment: Current Problems
POLI 227	(3)	Developing Areas/Introduction
POLI 445	(3)	International Political Economy: Monetary Relations

**Area 9: Cultures and People**

ANTH 206	(3)	Environment and Culture
ANTH 339	(3)	Ecological Anthropology
ENVR 421	(3)	Montreal: Environmental History and Sustainability
GEOG 210	(3)	Global Places and Peoples

**Area 10: Human Ecology and Health**

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

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

EDER 461	(3)	Society and Change
PHIL 221	(3)	Introduction to History and Philosophy of Science 2
PHIL 237	(3)	Contemporary Moral Issues
	(3)	Philosophy of Science 1

- Land Surface Processes and Environmental Change
- Renewable Resource Management
- Water En

## **Complementary Courses (45 credits)**

### **Senior Research Project**

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

3 credits from:

AEBI 427	(6)	Barbados Interdisciplinary Project
ENVR 401	(3)	Environmental Research
ENVR 451	(6)	Research in Panama
FSCI 444	(6)	Barbados Research Project
GEOG 451	(3)	Research in Society and Development in Africa

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

3 credits from:

AEBI 212	(3)	Evolution and Phylogeny
BIOL 304	(3)	Evolution

3 credits from:

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

3 credits from:

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

### **Ecology:**

3 credits from:

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

### **Statistics:**

3 credits from the following Statistics courses or equivalent:

Note: Other appropriate statistics courses may be approved as substitutions by the Program Adviser. Credit given for Statistics courses is subject to certain

AGEC 200*	(3)	Principles of Microeconomics
AGEC 430	(3)	Agriculture, Food and Resource Policy
BIOL 451	(3)	Research in Ecology and Development in Africa
ECON 208*	(3)	Microeconomic Analysis and Applications
ECON 225	(3)	Economics of the Environment
ENVB 437	(3)	Assessing Environmental Impact
ENVR 422	(3)	Montreal Urban Sustainability Analysis
GEOG 302	(3)	Environmental Management 1
GEOG 340	(3)	Sustainability in the Caribbean
GEOG 360	(3)	Analyzing Sustainability
GEOG 408	(3)	Geography of Development
NRSC 451	(3)	Research in Ecology and Development in Africa
PLNT 312	(3)	Urban Horticulture
POLI 345	(3)	International Organizations
POLI 350	(3)	Global Environmental Politics
WCOM 314	(3)	Communicating Science

**Field Courses**

3 credits from the following:

BIOL 240	(3)	Monteregian Flora
BIOL 331	(3)	Ecology/Behaviour Field Course
BIOL 334D1	(1.5)	Applied Tropical Ecology
BIOL 334D2	(1.5)	Applied Tropical Ecology
BIOL 335	(3)	Marine Mammals
BIOL 553	(3)	Neotropical Environments
ENTO 340	(3)	Field Entomology
ENVB 410	(3)	Ecosystem Ecology
GEOG 495	(3)	Field Studies - Physical Geography
PLNT 358	(3)	Flowering Plant Diversity
PLNT 460	(3)	Plant Ecology
WILD 401	(3)	Fisheries and Wildlife Management
WILD 475	(3)	Desert Ecology
WOOD 441	(3)	Integrated Forest Management

**General Scientific Principles**

6 credits from the following:

\* Note: You may take one of BREE 529, ENVB 529 or GEOG 314; you may take one of GEOG 322 or BREE 217; you may take one of ANSC 326 or BIOL 324.

ANSC 326*	(3)	Fundamentals of Population Genetics
ATOC 341	(3)	Caribbean Climate and Weather
BIOL 202	(3)	Basic Genetics
BIOL 216	(3)	Biology of Behaviour
BIOL 324*	(3)	Ecological Genetics

BIOL 342	(3)	Global Change Biology of Aquatic Ecosystems
BIOL 432	(3)	Limnology
BIOL 441	(3)	Biological Oceanography
BIOL 515	(3)	Advances in Aquatic Ecology
BREE 217*	(3)	Hydrology and Water Resources
BREE 529*	(3)	GIS for Natural Resource Management
ENVB 313	(3)	Phylogeny and Biogeography
		Advanced Topics in Ecotoxicology

BIOL 540	(3)	Ecology of Species Invasions
ENTO 330*	(3)	Insect Biology
ENTO 350*	(3)	Insect Biology and Control
ENVR 540	(3)	Ecology of Species Invasions
PARA 424	(3)	Fundamental Parasitology
PLNT 304	(3)	Biology of Fungi
PLNT 434	(3)	Weed Biology and Control
REDM 400	(3)	Science and Museums
WILD 307	(3)	Natural History of Vertebrates
WILD 350	(3)	Mammalogy
WILD 420	(3)	Ornithology

#### 5.4.2 Ecological Determinants of Health Concentration

This concentration is open only to students in the B.Sc.(Ag.Env.Sc.) Major Environment or B.Sc. Major Environment. Within this concentration, there are two program options: the Cellular stream, and the Population stream.

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

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

This domain considers the interface between the environment and human well-being, with particular focus on the triad that ties human health to the environment through the elements of food and infectious agents. Each of these elements is influenced by planned and unplanned environmental disturbances. For example, agricultural practices shift the balance between beneficial and harmful ingredients of food. Use of insecticides presents dilemmas with regard to the environment, economics, and human health. The 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 Cellular concentration will explore these interactions in more depth, at a physiological level. Students in the Population concentration will gain a depth of understanding at an ecosystem level that looks at society, land, and population health.

#### Suggested First Year (U1) Courses

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

#### Program Requirements

Note: You are required to take a maximum of 33 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 (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 Pr6Tm(CoResear)T70207 630 16115 x:FSCI 444(Core:)Tj1 0 0 1 88.859 7186058.2815 x:Dom

\* Note: You will not receive credit for either LSCI 211 or LSCI 202 if you have already received credit for both BIOL 200 and BIOL 201; you will not receive credit for either BIOL 200 or BIOL 201 if you have already received credit for both LSCI 202 and LSCI 211.

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

ANSC 433	(3)	Animal Nutrition and Metabolism
NUTR 207	(3)	Nutrition and Health
NUTR 307	(3)	Metabolism and 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
MIMM 314	(3)	Intermediate Immunology
PARA 438	(3)	Immunology
PATH 300	(3)	Human Disease

#### Infectious Disease

\* Note: You can take MIMM 413 or PARA 424, but not both.

ANSC 400	(3)	Eukaryotic Cells and Viruses
MIMM 324	(3)	Fundamental Virology
MIMM 413*	(3)	Parasitology
PARA 424*	(3)	Fundamental Parasitology
PPHS 501	(3)	Population Health and Epidemiology

#### Toxicology

ANSC 312	(3)	Animal Health and Disease
ENVB 500	(3)	Advanced Topics in Ecotoxicology
NUTR 512	(3)	Herbs, Foods and Phytochemicals
PHAR 300	(3)	Drug Action
PHAR 303	(3)	Principles of Toxicology

#### Hormones







**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
ENVR 401	(3)	Environmental Research
ENVR 451	(6)	Research in Panama
FSCI 444	(6)	Barbados Research Project

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

PARA 410	(3)	Environment and Infection
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**Domain: Complementary Courses (39 credits)**

39 credits of complementary courses are selected as follows:

LSCI 202 (3) Molecular Cell Biology

### **Molecular Biology**

Note: You will not receive credit for either LSCI 211 or LSCI 202 if you have already received credit for both BIOL 200 and BIOL 201; you will not receive credit for either BIOL 200 or BIOL 201 if you have already received credit for both LSCI 202 and LSCI 211.

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**

ANSC 433 (3) Animal Nutrition and Metabolism

En

GEOG 300	(3)	Human Ecology in Geography
GEOG 451*	(3)	Research in Society and Development in Africa
GEOG 498	(3)	Humans in Tropical Environments
NUTR 341	(3)	Global Food Security

### **Pollution Control and Pest Management**

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

BIOL 350*	(3)	Insect Biology and Control
BREE 322	(3)	Organic Waste Management
ENTO 350*	(3)	Insect Biology and Control
ENTO 352	(3)	Biocontrol of Pest Insects
NRSC 333	(3)	Pollution and Bioremediation
PARA 515	(3)	Water, Health and Sanitation

### **Genetics**

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

### **5.4.3 Environmetrics Concentration**

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

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

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

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

Graduates will be capable of effectively participating in the design of environmental studies and adequately analyzing data for use by the environmental community. Accordingly, the list of courses for the Environmetrics Domain is composed primarily of statistics courses and mathematically oriented courses with biological and ecological applications. The list is completed by general courses that refine the topics introduced in the Bieler School of Environment core courses by focusing on the ecology of living organisms, soil sciences or water resources, and impact assessment. These courses should allow the students to understand their interlocutors and be understood by them in their future job. Students can further develop their background in applied or mathematical statistics and their expertise in environmental sciences by taking complementary courses along each of two axes: statistics and mathematics, and environmental

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

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

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

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

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

ENVR 401	(3)	Environmental Research
ENVR 451	(6)	Research in Panama
FSCI 444	(6)	Barbados Research Project

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

AEMA 403	(3)	Environmetrics Stage
AEMA 414	(3)	Temporal and Spatial Statistics 01

**Domain - Complementary Courses (36 credits)**

36 credits of complementary courses are selected as follows:

12 credits - Fundamentals

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 and Community Ecology

**Impact**

ENVB 437	(3)	Assessing Environmental Impact
GEOG 340	(3)	Sustainability in the Caribbean
MIME 308	(3)	Social Impact of Technology

**Modelling**

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





Socio-En

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 "Bieler School of Environment Student Handbook" available on the website (<http://www.mcgill.ca/environment>), or contact Kathy Roulet, the Program Adviser ([kathy.roulet@mcgill.ca](mailto:kathy.roulet@mcgill.ca)).

### Program Requirements

Note: Students are required to take a maximum of 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.

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)

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
ENVR 401	(3)	Environmental Research
ENVR 451	(6)	Research in Panama
FSCI 444	(6)	Barbados Research Project

### 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
GEOG 305	(3)	Soils and Environment

One of:

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

One of:

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

## Applied Sciences (12 credits)

### Food and Human Health

\* Note: Students take FDSC 200 or NUTR 207, but not both.

AGRI 411	(3)	Global Issues on Development, Food and Agriculture
FDSC 200*	(3)	Introduction to Food Science
MICR 331	(3)	Microbial Ecology
NUTR 207*	(3)	Nutrition and Health
NUTR 501	(3)	Nutrition in Developing Countries
NUTR 505	(3)	Public Health Nutrition
PARA 410	(3)	Environment and Infection
PHAR 303	(3)	Principles of Toxicology

### Food Production

AEBI 421	(3)	Tropical Horticultural Ecology
AEBI 425	(3)	Tropical Energy and Food
AGRI 215	(3)	Agro-Ecosystems Field Course
AGRI 325	(3)	Sustainable Agriculture and Food Security
AGRI 550	(3)	Sustained Tropical Agriculture
BIOL 385	(3)	Plant Growth and Development
ENTO 352	(3)	Biocontrol of Pest Insects
PLNT 302	(3)	Forage Crops and Pastures
PLNT 307	(3)	Agroecology of Vegetables and Fruits
PLNT 353	(3)	Plant Structure and Function
PLNT 430	(3)	Pesticides in Agriculture
PLNT 434	(3)	Weed Biology and Control
SOIL 315	(3)	Soil Nutrient Management

### Natural Resources and Environmental Resource Impacts

\* Note: Students take BIOL 343 or BIOL 465\*, but not both.

\*\* Note: Students take BREE 205 or BREE 322, but not both.

AGRI 435	(3)	Soil and Water Quality Management
BIOL 343	(3)	Biodiversity in the Caribbean
BIOL 465*	(3)	Conservation Biology
BIOL 553	(3)	Neotropical Environment
BREE 205	(3)	Hydrology and Water Quality
BREE 322	(3)	Organic Waste Management
BREE 325	(3)	Ecological Engineering
ENVI 305	(3)	Advanced Topics in Ecotoxicology
GEOL 305	(3)	Environmental Hydrology
GEOL 306	(3)	Pollution and Bioremediation
GEOL 307	(3)	Environmental Soil Chemistry
GEOL 308	(3)	Fisheries and Wildlife Management
GEOL 309	(3)	Wildlife Conservation

### Geography (6 credits)

#### Environmental Resource Policy

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

ECON 405	(3)	Intermediate Microeconomic Theory
AGECE 333	(3)	Resource Economics
AGECE 334	(3)	Agriculture, Food and Resource Policy
AGECE 335	(3)	Economics of International Agricultural Development
AGECE 336	(3)	Economics of the Environment
AGECE 337	(3)	Natural Resource Economics

#### Human Health and Human Impacts



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
ENVR 401	(3)	Environmental Research
ENVR 451	(6)	Research in Panama
FSCI 444	(6)	Barbados Research Project
GEOG 451	(3)	Research in Society and Development in Africa

**Domain Required Course (3 credits)**

GEOG 203	(3)	Environmental Systems
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**Domain: Complementary Courses (39 credits)**

39 credits of complementary courses are selected as follows:

9 credits - 3 credits from each category of Statistics, Geographic Information Systems, Weather and Climate

9 credits of fundamental land surface processes

3 credits of environment and resource management

3 credits of field course

3 credits of social science

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

**Statistics**

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

\* Note: Other appropriate statistics courses may be approved as substitutions by the Program Adviser. Credit given for Statistics courses is subject to certain restrictions. Students in the Faculty of Arts or the Faculty of Science should consult the "Course Overlap" information in the "Course Requirements" section of the eCalendar 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

**Geographic Information Systems**

3 credits from:

ENVB 529	(3)	GIS for Natural Resource Management
GEOG 201	(3)	Introductory Geo-Information Science

**Weather and Climate**

3 credits from:

ATOC 215	(3)	Oceans, Weather and Climate
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ATOC 341 (3) Caribbean Climate and Weather  
ENVB 301 (3) Meteorology

**Fundamental Land Surface Processes**

9 credits total of fundamental land surface processes chosen as follows:

0-3 credits chosen from:

GEOG 321 (3) Climatic Environments

0-3 credits from:

GEOG 272 (3) Earth's Changing Surface

SOIL 300 (3) Geosystems

0-3 credits from:

**Field Course**

3 credits from:

ATOC 555	(3)	Field Course 1
BIOL 343	(3)	Biodiversity in the Caribbean
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:**

3 credits from:

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
ENVR 421	(3)	Montreal: Environmental History and Sustainability
GEOG 221	(3)	Environment and Health
GEOG 408	(3)	Geography of Development
GEOG 498	(3)	Humans in Tropical Environments
HIST 510	(3)	Environmental History of Latin America (Field)
NRSC 221	(3)	Environment and Health
POLI 350	(3)	Global Environmental Politics
WCOM 314	(3)	Communicating Science

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:

BIOL 432	(3)	Limnology
ENVB 410	(3)	Ecosystem Ecology
GEOG 372	(3)	Running Water Environments
GEOG 470	(3)	Wetlands
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
GEOG 401	(3)	Socio-Environmental Systems: Theory and Simulation
GEOG 505	(3)	Global Biogeochemistry
GEOG 537	(3)	Advanced Fluvial Geomorphology
MICR 331	(3)	Microbial Ecology
NRSC 333	(3)	Pollution and Bioremediation
SOIL 510	(3)	Environmental Soil Chemistry
SOIL 535	(3)	Soil Ecology

#### 5.4.6 Renewable Resource Management Concentration

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

##### 5.4.6.1 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 "Bieler School of Environment Student Handbook" available on the website (<http://www.mcgill.ca/environment>), or contact Ms. Kathy Roulet, the Program Adviser ([kathy.roulet@mcgill.ca](mailto:kathy.roulet@mcgill.ca)).

#### Program Requirements

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

ENVR 401	(3)	Environmental Research
ENVR 451	(6)	Research in Panama
FSCI 444	(6)	Barbados Research Project

**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 and 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 529	(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
	(3)	Natural History of Vertebrates

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
ENVR 422	(3)	Montreal Urban Sustainability Analysis
GEOG 302	(3)	Environmental Management 1
GEOG 404	(3)	Environmental Management 2
PLNT 300	(3)	Cropping Systems
WILD 401	(3)	Fisheries and Wildlife Management
WOOD 441	(3)	Integrated Forest Management

#### **5.4.7 Water Environments and Ecosystems Concentration**

This concentration is open only to students in the B.Sc.(Ag.Env.Sc.) Major Environment or B.Sc. Major Environment. Within this concentration, there are two program options: the Biological stream, and the Physical stream.

**Bachelor of Science (Agricultural and Environmental Sciences) (B.Sc.(Ag.Env.Sc.)) or Bachelor of Science (B.Sc.) - Major Environment - Water Envir**

ENVR 401	(3)	Environmental Research
ENVR 451	(6)	Research in Panama
FSCI 444	(6)	Barbados Research Project
GEOG 451	(3)	Research in Society and Development in Africa

**Domain: Required Courses (3 credits)**

ATOC 214	(3)	Introduction: Physics of the Atmosphere
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**Domain: Complementary Courses (36 credits)**

36 credits of complementary courses are selected as follows:

3 credits - Meteorology

6 credits - Hydrology and Ecology

3 credits - Statistics

3 credits - Field Course

3 credits - Social Sciences and Policy

18 credits chosen in total from List A: Water Environments and Habitats, and List B: Surface and Atmospheric Processes

**Meteorology:**

3 credits from:

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

**Hydrology and Ecology:**

6 credits selected as follows:

3 credits from:

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

3 credits from:

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

**Statistics:**

3 credits from:

\* Note: Other appropriate statistics courses may be approved as substitutes by the Program Adviser. Credit for Statistics courses is subject to certain restrictions. Students in the Faculty of Arts or the Faculty of Science should consult "Course Overlap" information in the "Course Requirements" section of the eCalendar for the Faculty of Science.

AEMA 310*	(3)	Statistical Methods 1
BIOL 373	(3)	Biometry
GEOG 202	(3)	Statistics and Spatial Analysis
MATH 203	(3)	Principles of Statistics 1

**Field Course:**

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

BIOL 331	(3)	Ecology/Behaviour Field Course
BIOL 334D1	(1.5)	Applied Tropical Ecology
BIOL 334D2	(1.5)	Applied Tropical Ecology
BIOL 335	(3)	Marine Mammals
BIOL 343	(3)	Biodiversity in the Caribbean
GEOG 495	(3)	Field Studies - Physical Geography
WILD 401	(3)	Fisheries and Wildlife Management

**Social Sciences and Policy:**

3 credits from:

AGEC 333	(3)	Resource Economics
ANSC 555	(3)	The Use and Welfare of Animals
ANTH 339	(3)	Ecological Anthropology
ANTH 418	(3)	Environment and Development
ECON 225	(3)	Economics of the Environment
ECON 326	(3)	Ecological Economics
ENVB 437	(3)	Assessing Environmental Impact
ENVR 421	(3)	Montreal: Environmental History and Sustainability
ENVR 422	(3)	Montreal Urban Sustainability Analysis
GEOG 302	(3)	Environmental Management 1
GEOG 340	(3)	Sustainability in the Caribbean
GEOG 404	(3)	Environmental Management 2
GEOG 498	(3)	Humans in Tropical Environments
GEOG 530	(3)	Global Land and Water Resources
HIST 510	(3)	Environmental History of Latin America (Field)
POLI 345	(3)	International Organizations
POLI 350	(3)	Global Environmental Politics
WCOM 314	(3)	Communicating Science

BREE 533	(3)	Water Quality Management
ENVB 210*	(3)	The Biophysical Environment
ENVB 410	(3)	Ecosystem Ecology
ENVB 500	(3)	Advanced Topics in Ecotoxicology
ENVR 540*	(3)	Ecology of Species Invasions
GEOG 305*	(3)	Soils and Environment
GEOG 470	(3)	Wetlands
MICR 331	(3)	Microbial Ecology
NRSC 333	(3)	Pollution and Bioremediation
PARA 410	(3)	Environment and Infection
SOIL 535	(3)	Soil Ecology
WILD 302	(3)	Fish Ecology
WILD 401	(3)	Fisheries and Wildlife Management

### List B (Surface and Atmospheric Processes)

6-9 credits chosen from:

\* Note: you may take ATOC 219 or CHEM 219, but not both; you may take ENVB 529 or GEOG 201, but not both.

ATOC 219*	(3)	Introduction to Atmospheric Chemistry
ATOC 341	(3)	Caribbean Climate and Weather
BIOL 515	(3)	Advances in Aquatic Ecology
CHEM 219*	(3)	Introduction to Atmospheric Chemistry
CHEM 267	(3)	Introductory Chemical Analysis
ENVB 529*	(3)	GIS for Natural Resource Management
ENVB 530	(3)	Advanced GIS for Natural Resource Management
EPSC 220	(3)	Principles of Geochemistry
GEOG 201*	(3)	Introductory Geo-Information Science
GEOG 308	(3)	Remote Sensing for Earth Observation
GEOG 372	(3)	Running Water Environments
GEOG 505	(3)	Global Biogeochemistry
GEOG 506	(3)	Advanced Geographic Information Science
GEOG 537	(3)	Advanced Fluvial Geomorphology
GEOG 550	(3)	Historical Ecology Techniques

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

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## Program Requirements

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

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

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

AEBI 427	(6)	Barbados Interdisciplinary Project
ENVR 401	(3)	Environmental Research
ENVR 451	(3)	Research in Society and Development in Africa
FSCI 444	(6)	Barbados Research Project
GEOG 451	(3)	Research in Society and Development in Africa

### Domain: Required Courses (9 credits)

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

### Domain: Complementary Courses (33 credits)

33 credits of complementary courses are selected as follows:

3 credits - Meteorology

6 credits - Hydrology and Ecology

3 credits - f n Society and De



## Hydrology and Ecology

6 credits selected as follows:

3 credits from:

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

3 credits from:

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

## Statistics

3 credits from:

\* Note: Other appropriate statistics courses may be approved as substitutes by the Program Adviser.

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

AEMA 310*	(3)	Statistical Methods 1
BIOL 373	(3)	Biometry
GEOG 202	(3)	Statistics and Spatial Analysis
MATH 203	(3)	Principles of Statistics 1

## Intermediate Calculus

3 credits from:

AEMA 202	(3)	Intermediate Calculus
MATH 222	(3)	Calculus 3

## Field Course:

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

Ecology/Behaviourr

BREE 420	(3)	Engineering for Sustainability
BREE 506	(3)	Advances in Drainage Management
BREE 509	(3)	Hydrologic Systems and Modelling.
BREE 533	(3)	Water Quality Management
CIVE 323	(3)	Hydrology and Water Resources
ENVB 210*	(3)	The Biophysical Environment
ENVB 529*	(3)	GIS for Natural Resource Management
ENVB 530	(3)	Advanced GIS for Natural Resource Management
EPSC 549	(3)	Hydrogeology
GEOG 201*	(3)	Introductory Geo-Information Science
GEOG 305*	(3)	Soils and Environment
GEOG 308	(3)	Remote Sensing for Earth Observation
GEOG 314	(3)	Geospatial Analysis
GEOG 506	(3)	Advanced Geographic Information Science
GEOG 537	(3)	Advanced Fluvial Geomorphology
SOIL 315	(3)	Soil Nutrient Management

0-3 credits from:

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

**List B: (Marine and Freshwater Biology)**

6 credits chosen from:

BIOL 310	(3)	Biodiversity and Ecosystems
BIOL 342	(3)	Global Change Biology of Aquatic Ecosystems
BIOL 432	(3)	Limnology
BIOL 441	(3)	Biological Oceanography
BIOL 465	(3)	Conservation Biology
BIOL 553	(3)	Neotropical Environments
ENVB 410	(3)	Ecosystem Ecology
GEOG 470	(3)	Wetlands
GEOG 505	(3)	Global Biogeochemistry
GEOG 530	(3)	Global Land and Water Resources
WILD 302	(3)	Fish Ecology
WILD 421	(3)	Wildlife Conservation

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**5.5 Honours Environment**

**Environment Program Advisor**

Telephone: 514-398-4306  
 Email: [advisor.environment@mcgill.ca](mailto:advisor.environment@mcgill.ca)

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

The Honours Environment program offers students the opportunity to undertake a year-long independent research project under the close supervision of a professor. Honours research provides excellent preparation for graduate studies, but is not required for such studies. The Honours program (6 credits) is undertaken in a student's final year of their regular degree and does not add to the length (duration) of the degree. If, for some reason, a student cannot complete the Honours requirements, they may still graduate within the regular Environment program.

### **5.5.1 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 Bieler 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 Bieler School of Environment Program Adviser.

#### **Honours Required Courses (6 credits)**



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

## 5.6 Joint Honours Component Environment

### Advisor

Environment Program Advisor  
 Telephone: 514-398-4306  
 Email: [advisor.environment@mcgill.ca](mailto:advisor.environment@mcgill.ca)

This program is open only to students in the Faculty of Arts.

The Joint Honours Component Environment offers students the opportunity to undertake a year-long, interdisciplinary research project in their final year under the close supervision of 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.

### 5.6.1 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 (21 credits)

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

## Complementary Courses (15 credits)

### Statistics

3 credits of statistics from the following (or equivalent):

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

### Honours Research

0-6 credits from the following:

ENVR 494	(3)	Joint Honours Research
ENVR 495D1	(3)	Honours Research
ENVR 495D2	(3)	Honours Research
ENVR 495N1	(3)	Honours Research
ENVR 495N2	(3)	Honours Research

Note: Students must complete 6 credits of honours research between the two components of the program. If the second component requires 0 credits of honours research, the student must take 6 credits of ENVR honours research. If the second component requires 3 credits of honours research, the student must take 3 credits of ENVR honours research. If the second component requires 6 credits of honours research, the student is not required to take any credits of ENVR honours research. Students may not count the same honours research credits towards both components.

6-12 credits chosen with approval of the Program Adviser. A maximum of 3 credits of these courses may be at 200 or 300 level.

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## 5.7 Diploma Environment

### Program Advisor

Telephone: 514-398-4306

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### 5.7.1 Diploma (Dip.) 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 and 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.

#### Required Courses (18 credits)

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

ENVR 203	(3)	Knowledge, Ethics and Environment
ENVR 301	(3)	Environmental Research Design
ENVR 400	(3)	Environmental Thought

### Complementary Courses (12 credits)

12 credits of complementary courses are selected as follows:

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

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

### Suggested Course List

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

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

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

Some courses on the Suggested Course List may be subject to other regulations (e.g., the Restricted Courses List for Faculty of Science students). If in doubt, ask the Program Adviser.

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

### Social Sciences and Policy

AGEC 231	(3)	Economic Systems of Agriculture
AGEC 333	(3)	Resource Economics
AGEC 430	(3)	Agriculture, Food and Resource Policy
AGEC 442	(3)	Economics of International Agricultural Development
AGRI 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 418	(3)	Environment and Development
ANTH 512	(3)	Political Ecology
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
EDER 494	(3)	Human Rights and Ethics in Practice
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
ENVR 421	(3)	Montreal: Environmental History and Sustainability
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 310	(3)	Development and Livelihoods
GEOG 370	(3)	Protected Areas
GEOG 403	(3)	Global Health and Environmental Change
GEOG 408	(3)	Geography of Development
GEOG 423	(3)	Dilemmas of Development
GEOG 530	(3)	Global Land and Water Resources
HIST 249	(3)	Health and the Healer in Western History
HIST 292	(3)	History and the Environment
NRSC 221	(3)	Environment and Health
PHIL 221	(3)	Introduction to History and Philosophy of Science 2
PHIL 230	(3)	Introduction to Moral Philosophy 1
PHIL 237	(3)	Contemporary Moral Issues
PHIL 334	(3)	Ethical Theory
PHIL 341	(3)	Philosophy of Science 1
PHIL 343	(3)	Biomedical Ethics
PHIL 348	(3)	Philosophy of Law 1
POLI 212	(3)	Government and Politics - Developed World
POLI 227	(3)	Developing Areas/Introduction
POLI 345	(3)	International Organizations
POLI 350	(3)	Global Environmental Politics
POLI 412	(3)	Canadian Voting/Public Opinion
POLI 445	(3)	International Political Economy: Monetary Relations
POLI 474	(3)	Inequality and Development
PSYC 215	(3)	Social Psychology
RELG 270	(3)	Religious Ethics and the Environment
RELG 370	(3)	Religion and Human Rights
SOCI 222	(3)	Urban Sociology
SOCI 234	(3)	Population and Society
SOCI 235	(3)	Technology and Society
SOCI 254	(3)	Development and Underdevelopment
SOCI 307	(3)	Globalization
SOCI 365	(3)	Health and Development
SOCI 366	(3)	Neighborhoods and Inequality
SOCI 386	(3)	Contemporary Social Movements
URBP 201	(3)	Planning the 21st Century City
URBP 504	(3)	Planning for Active Transportation
URBP 506	(3)	Environmental Policy and Planning



URBP 530	(3)	Urban Infrastructure and Services in International Context
URBP 551	(3)	Urban Design and Planning
WCOM 314	(3)	Communicating Science

### Natural Sciences and Technology

\*\* Note: you may take LSCI 230 or MIMM 211, but not both; you may take ENVB 529 or GEOG 201, but not both; you may take one of BREE 217, CIVE 323 or GEOG 322; 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 COMP 202 or COMP 204, but not both; you may take EPSC 201 or EPSC 233, but not both.

AGRI 340	(3)	Principles of Ecological Agriculture
ANSC 326	(3)	Fundamentals of Population Genetics
ANTH 311	(3)	Primate Behaviour and Ecology
ATOC 214	(3)	Introduction: Physics of the Atmosphere
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)	Global Change Biology of Aquatic Ecosystems
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 327	(3)	Bio-Environmental Engineering
BREE 518	(3)	Ecological Engineering
CHEM 212	(4)	Introductory Organic Chemistry 1
CHEM 281	(3)	Inorganic Chemistry 1
CIVE 225	(4)	Environmental Engineering
CIVE 323**	(3)	Hydrology and Water Resources
CIVE 550	(3)	Water Resources Management
COMP 202**	(3)	Foundations of Programming
COMP 204**	(3)	Computer Programming for Life Sciences
ENVB 210	(3)	The Biophysical Environment
ENVB 301	(3)	Meteorology
ENVB 305**	(3)	Population and Community Ecology
ENVB 410	(3)	Ecosystem Ecology
ENVB 415	(3)	Ecosystem Management
ENVB 529**	(3)	GIS for Natural Resource Management
ENVR 200	(3)	The Global Environment
ENVR 202	(3)	The Evolving Earth
ENVR 422	(3)	Montreal Urban Sustainability Analysis
EPSC 201**	(3)	Understanding Planet Earth

EPSC 233**	(3)	Earth and Life History
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)	Remote Sensing for Earth Observation
GEOG 321	(3)	Climatic Environments
GEOG 322**	(3)	Environmental Hydrology
GEOG 372	(3)	Running Water Environments
GEOG 470	(3)	Wetlands
GEOG 550	(3)	Historical Ecology Techniques
LSCI 230**	(3)	Introductory Microbiology
MICR 331	(3)	Microbial Ecology
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
NRSC 333	(3)	Pollution and Bioremediation
PARA 410	(3)	Environment and Infection
PARA 515	(3)	Water, Health and Sanitation
PHYS 228	(3)	Energy and the Environment
PLNT 304	(3)	Biology of Fungi
PLNT 305	(3)	Plant Pathology
PLNT 358	(3)	Flowering Plant Diversity
PLNT 460	(3)	Plant Ecology
SOIL 300	(3)	Geosystems
WILD 302	(3)	Fish Ecology
WILD 421**	(3)	Wildlife Conservation