ENVIRONMENT MAJOR - WATER ENVIRONMENTS & ECOSYSTEMS - BIOLOGICAL (B.SC. (AG.ENV.SC.)) OR (B.SC.) (60 CREDITS)

Offered by: Bieler School of Environment
Degree: Bachelor of Science (Agricultural and Environmental Sciences)
Program credit weight: 60

Program Description

The Water Environments and Ecosystems - Biological (60 credits including core) is a concentration open only to students in the B.Sc. (Ag.Env.Sc.); Major in Environment or B.Sc.; Major in Environment program.

The program focuses on the ecological facet of the water environment and the mechanisms regulating the different forms of life in water bodies; and to a lesser extent on the physical mechanisms controlling water properties.

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

Note: For information about Fall 2025 and Winter 2026 course offerings, please check back on May 8, 2025. Until then, the "Terms offered" field will appear blank for most courses while the class schedule is being finalized.

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).

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.

Expand allContract all

Course	Title	Credits
ENVR 200	The Global Environment.	3
ENVR 201	Society, Environment and Sustainability.	3
ENVR 202	The Evolving Earth.	3
ENVR 203	Knowledge, Ethics and Environment.	3
ENVR 301	Environmental Research Design.	3
ENVR 400	Environmental Thought.	3

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

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

Expand allContract all

Course	Title	Credits
AEBI 427	Barbados Interdisciplinary Project.	6
ENVR 401	Environmental Research.	3
ENVR 451	Research in Panama.	6
FSCI 444	Barbados Research Project.	6
GEOG 451	Research in Society and Development in Africa.	3

Domain: Required Courses (3 credits)

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Course	Title	Credits
ATOC 214	Introduction: Physics of the Atmosphere.	3

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:

Expand allContract all

Course	Title	Credits
ATOC 215	Oceans, Weather and Climate.	3
ENVB 301	Meteorology.	3

Hydrology and Ecology

6 credits selected as follows:

3 credits from:

Expand allContract all

Course	Title	Credits
BREE 217	Hydrology and Water Resources.	3
GEOG 322	Environmental Hydrology.	3

3 credits from:

Expand allContract all

Course	Title	Credits
BIOL 308	Ecological Dynamics.	3
ENVB 305	Population and Community Ecology.	3

Statistics

3 credits from:

Expand allContract all

Course	Title	Credits
AEMA 310	Statistical Methods 1.[1]	3
BIOL 373	Biometry.	3
GEOG 202	Statistics and Spatial Analysis.	3
MATH 203	Principles of Statistics 1.	3

[1] 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 Course Catalogue for the Faculty of Science.

Field Course

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

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

Social Sciences and Policy

3 credits from:

Expand allContract all

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

18 credits chosen in total from List A and List B as follows:

List A (Water Environments and Habitats)

9-12 credits chosen from:

Expand allContract all

Course	Title	Credits
BIOL 310	Biodiversity and Ecosystems.	3
BIOL 342	Global Change Biology of Aquatic Ecosystems.	3
BIOL 432	Limnology.	3
BIOL 441	Biological Oceanography.	3
BIOL 465	Conservation Biology.	3
BIOL 540	Ecology of Species Invasions.[1]	3
BIOL 553	Neotropical Environments.	3
BREE 533	Water Quality Management.	3
ENVB 210	The Biophysical Environment.[1]	3
ENVB 410	Ecosystem Ecology.	3
ENVB 500	Advanced Topics in Ecotoxicology.	3
ENVR 540	Ecology of Species Invasions.[1]	3
GEOG 305	Soils and Environment.[1]	3
GEOG 470	Wetlands.	3
MICR 331	Microbial Ecology.	3
NRSC 333	Pollution and Bioremediation.	3
PARA 410	Environment and Infection.	3
SOIL 535	Soil Ecology.	3

WILD 302	Fish Ecology.	3
WILD 401	Fisheries and Wildlife Management.	3

[1] Note: you may take BIOL 540 Ecology of Species Invasions. or ENVR 540 Ecology of Species Invasions., but not both; you may take ENVB 210 The Biophysical Environment. or GEOG 305 Soils and Environment., but not both,

List B (Surface and Atmospheric Processes)

6-9 credits chosen from:

Expand allContract all

Course	Title	Credits
ATOC 219	Introduction to Atmospheric Chemistry.[1]	3
ATOC 341	Caribbean Climate and Weather.	3
BIOL 515	Advances in Aquatic Ecology.	3
CHEM 219	Introduction to Atmospheric Chemistry.[1]	3
CHEM 267	Introductory Chemical Analysis.	3
ENVB 529	GIS for Natural Resource Management.[1]	3
ENVB 530	Advanced GIS for Natural Resource Management.	3
EPSC 220	Principles of Geochemistry.	3
GEOG 201	Introductory Geo-Information Science.[1]	3
GEOG 308	Remote Sensing for Earth Observation.	3
GEOG 372	Running Water Environments.	3
GEOG 505	Global Biogeochemistry.	3
GEOG 506	Advanced Geographic Information Science.	3
GEOG 537	Advanced Fluvial Geomorphology.	3
GEOG 550	Historical Ecology Techniques.	3

[1] Note: you may take ATOC 219 Introduction to Atmospheric Chemistry. or CHEM 219 Introduction to Atmospheric Chemistry., but not both; you may take ENVB 529 GIS for Natural Resource Management. or GEOG 201 Introductory Geo-Information Science. but not both.