ENVIRONMENT MAJOR - ENVIRONMETRICS (B.SC.(AG.ENV.SC.)) OR (B.SC.) (63 CREDITS)

Offered by: Bieler School of Environment
Degree: Bachelor of Science (Agricultural and Environmental Sciences)
Program credit weight: 63

Program Description

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 sciences. An internship is also offered to students to provide them with preliminary professional experience.

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).

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

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

Program Requirements

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

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

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

Domain: Required Courses (6 credits)

Expand allContract all

Course	Title	Credits
AEMA 403	Environmetrics Stage.	3
AEMA 414	Temporal and Spatial Statistics 01.	3

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

Expand allContract all

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

Impact

Expand allContract all

Course	Title	Credits
ENVB 437	Assessing Environmental Impact.	3
GEOG 340	Sustainability in the Caribbean.	3
MIME 308	Social Impact of Technology.	3

Modelling

Expand allContract all

Course	Title	Credits
BIOL 309	Mathematical Models in Biology.	3
ENVB 506	Quantitative Methods: Ecology.	3

GIS Techniques

Expand allContract all

Course	Title	Credits
ENVB 529	GIS for Natural Resource Management.	3
GEOG 201	Introductory Geo-Information Science.	3

Basic Environmental Science

One of:

Expand allContract all

Course	Title	Credits
BREE 217	Hydrology and Water Resources.	3
CIVE 323	Hydrology and Water Resources.	3
ENVB 210	The Biophysical Environment.	3
GEOG 305	Soils and Environment.	3
GEOG 322	Environmental Hydrology.	3
GEOG 350	Ecological Biogeography.	3

Statistics

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

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

Option 1

Expand allContract all

Course	Title	Credits
MATH 323	Probability.	3
MATH 324	Statistics.	3

Option 2

One of:

Expand allContract all

Course	Title	Credits
AEMA 310	Statistical Methods 1.	3
BIOL 373	Biometry.	3

And one of:

Expand allContract all

Course	Title	Credits
AEMA 411	Experimental Designs 01.	3
CIVE 555	Environmental Data Analysis.	3
GEOG 351	Quantitative Methods.	3
SOCI 461	Quantitative Data Analysis.	3

A total of 15 credits are chosen from the following two lists.

List 1

3 credits minimum of statistics and mathematics chosen from:

Expand allContract all

Course	Title	Credits
BIOL 434	Theoretical Ecology.	3
BREE 252	Computing for Engineers.[1]	3
BREE 319	Engineering Mathematics.[1]	3
GEOG 401	Socio-Environmental Systems: Theory and Simulation.	3
MATH 223	Linear Algebra.	3
MATH 326	Nonlinear Dynamics and Chaos.	3
MATH 423	Applied Regression.	3
MATH 447	Introduction to Stochastic Processes.	3
MATH 525	Sampling Theory and Applications.	4
SOCI 504	Quantitative Methods 1.	3
SOCI 580	Social Research Design and Practice.	3

[1] or equivalent courses

[1] Note: or equivalent courses to BREE 252 Computing for Engineers. or BREE 319 Engineering Mathematics..

List 2

3 credits minimum of environmental sciences chosen from:

Expand allContract all

Course	Title	Credits
AGRI 550	Sustained Tropical Agriculture.	3
ATOC 341	Caribbean Climate and Weather.	3
BIOL 331	Ecology/Behaviour Field Course.	3
BIOL 343	Biodiversity in the Caribean.	3
BIOL 553	Neotropical Environments.	3
ENVB 313	Phylogeny and Biogeography.	3
ENVB 500	Advanced Topics in Ecotoxicology.	3
ENVR 421	Montreal: Environmental History and Sustainability.	3
ENVR 422	Montreal Urban Sustainability Analysis.	3
GEOG 300	Human Ecology in Geography.	3
GEOG 302	Environmental Management 1.	3
GEOG 404	Environmental Management 2.	3
GEOG 494	Urban Field Studies.	3
GEOG 499	Subarctic Field Studies.	3
NRSC 333	Pollution and Bioremediation.	3
PLNT 460	Plant Ecology.	3
WILD 401	Fisheries and Wildlife Management.	3