ENVIRONMENT MAJOR - ATMOSPHERIC ENVIRONMENT AND AIR QUALITY (B.SC.) (60 CREDITS)

Offered by: Bieler School of Environment
Degree: Bachelor of Science
Program credit weight: 60

Program Description

The rapid expansion of industrialization has been accompanied by a host of environmental problems, many, if not most, involving the atmosphere. Some problems are of a local nature, such as air pollution in large urban centres, while others are global, or at least reach areas far removed from industrial activities.

The emphasis in this domain is on the mechanisms of atmospheric flow and on atmospheric chemistry. Courses examine how the atmosphere transports pollution, lifting it to great heights into the stratosphere or keeping it trapped near the ground, moving it around the globe or imprisoning it locally, or how it simply cleanses itself of pollution through rainfall. The domain also gives students the training required to understand the important chemical reactions taking place within the atmosphere, as well as the know-how necessary to measure and analyze atmospheric constituents.

Degree Requirements — B.Sc.

This program is offered as part of a Bachelor of Science (B.Sc.) degree.

To graduate, students must satisfy both their program requirements and their degree requirements.

- The program requirements (i.e., the specific courses that make up this program) are listed under the Course Tab (above).
- The degree requirements—including the mandatory Foundation program, appropriate degree structure, and any additional components—are outlined on the Degree Requirements page.

Students are responsible for ensuring that this program fits within the overall structure of their degree and that all degree requirements are met. Consult the Degree Planning Guide on the SOUSA website for additional guidance.

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).

Program Requirements

Note: Students are required to take a maximum of 31 credits at the 200 level and a minimum of 12 credits at the 400 level or higher in this program. This includes core and required courses.

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

Core: Required Courses

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

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 (15 credits)

15 credits from:

Expand allContract all

Course	Title	Credits
ATOC 214	Introduction: Physics of the Atmosphere.	3
ATOC 215	Oceans, Weather and Climate.	3
ATOC 219	Introduction to Atmospheric Chemistry.[1]	3
ATOC 315	Thermodynamics and Convection.	3
CHEM 219	Introduction to Atmospheric Chemistry.[1]	3
GEOG 308	Remote Sensing for Earth Observation.	3

[1] Note: You may take ATOC 219 Introduction to Atmospheric Chemistry. or CHEM 219 Introduction to Atmospheric Chemistry., but not both.

Domain: Complementary Courses (24 credits)

24 credits of complementary courses are selected as follows:

6 credits - Analytical Chemistry/Calculus courses

3 credits - Statistics

9 credits - Math or Physical Science

6 credits - Social Science

Analytical Chemistry/Calculus

One of: (students will not receive credit for both):

Expand allContract all

Course	Title	Credits
AEMA 202	Intermediate Calculus.	3
MATH 222	Calculus 3.	3

Expand allContract all

Course	Title	Credits
CHEM 267	Introductory Chemical Analysis.[1]	3
FDSC 213	Analytical Chemistry 1.[1]	3

[1] Note: Students take either CHEM 267 Introductory Chemical Analysis. or FDSC 213 Analytical Chemistry 1..

Statistics

3 credits of Statistics courses or equivalent from:

Expand allContract all

Course	Title	Credits
AEMA 310	Statistical Methods 1.	3
MATH 203	Principles of Statistics 1.	3

Math or Physical Science

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

Expand allContract all

Course	Title	Credits
AEMA 305	Differential Equations.[1]	3
ATOC 309	Weather Radars and Satellites.	3
ATOC 519	Advances in Chemistry of Atmosphere.[1]	3
ATOC 540	Synoptic Meteorology 1.	3
CHEM 273	Introductory Physical Chemistry 2: Kinetics and Methods.	3
CHEM 377	Instrumental Analysis 2.	3
CHEM 519	Advances in Chemistry of Atmosphere.[1]	3
CIVE 225	Environmental Engineering.	4
CIVE 561	Greenhouse Gas Emissions.	3
COMP 208	Computer Programming for Physical Sciences and Engineering .	3
GEOG 505	Global Biogeochemistry.	3
MATH 223	Linear Algebra.	3
MATH 315	Ordinary Differential Equations.[1]	3
NRSC 333	Pollution and Bioremediation.	3

[1] Note: You may take ATOC 519 Advances in Chemistry of Atmosphere. or CHEM 519 Advances in Chemistry of Atmosphere., but not both; you may take AEMA 305 Differential Equations. or MATH 315 Ordinary Differential Equations., but not both.

Social Science

6 credits from:

Expand allContract all

Course	Title	Credits
ANTH 206	Environment and Culture.	3
ANTH 418	Environment and Development.	3
ECON 225	Economics of the Environment.	3
ECON 347	Economics of Climate Change.	3
ENVR 422	Montreal Urban Sustainability Analysis.	3
GEOG 221	Environment and Health.	3
GEOG 302	Environmental Management 1.	3
GEOG 303	Health Geography.	3
GEOG 340	Sustainability in the Caribbean.	3
GEOG 403	Global Health and Environmental Change.	3
GEOG 404	Environmental Management 2.	3
GEOG 498	Humans in Tropical Environments.	3
RELG 270	Religious Ethics and the Environment.	3