# ENVIRONMENT MAJOR - FOOD PRODUCTION AND ENVIRONMENT (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 programs.

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

**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.

## Program Prerequisites or Corequisites

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

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

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| Course | Title | Credits |
|---|---|---|
| BIOL 112 | Cell and Molecular Biology. | 3 |
| LSCI 211 | Biochemistry 1. | 3 |

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

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| Course | Title | Credits |
|---|---|---|
| CHEM 212 | Introductory Organic Chemistry 1. | 4 |
| FDSC 230 | Organic Chemistry. | 4 |

## 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 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)

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| 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.

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| 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 |

## Domain: Required Courses (6 credits)

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| Course | Title | Credits |
|---|---|---|
| AEBI 210 | Organisms 1. | 3 |
| AGRI 340 | Principles of Ecological Agriculture. | 3 |

# 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.

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

One of:

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| Course | Title | Credits |
|---|---|---|
| ANSC 250 | Introduction to Livestock Management | 3 |

One of:

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| Course | Title | Credits |
|---|---|---|
| BIOL 202 | Basic Genetics. | 3 |
| LSCI 204 | Genetics. | 3 |

One of:

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| Course | Title | Credits |
|---|---|---|
| ENVB 210 | The Biophysical Environment. | 3 |
| GEOG 305 | Soils and Environment. | 3 |

One of:

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

One of:

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| Course | Title | Credits |
|---|---|---|
| AGEC 200 | Principles of Microeconomics. | 3 |
| ECON 208 | Microeconomic Analysis and Applications. | 3 |

## Applied Sciences (12 credits)

### Food and Human Health

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| Course | Title | Credits |
|---|---|---|
| AGRI 411 | Global Issues on Development, Food and Agriculture. | 3 |
| FDSC 200 | Introduction to Food Science.[1] | 3 |
| MICR 331 | Microbial Ecology. | 3 |
| NUTR 207 | Nutrition and Health.[1] | 3 |
| NUTR 501 | Nutrition in the Majority World. | 3 |
| NUTR 505 | Public Health Nutrition. | 3 |
| PARA 410 | Environment and Infection. | 3 |
| PHAR 303 | Principles of Toxicology. | 3 |

[1] Note: Students take FDSC 200 Introduction to Food Science. or NUTR 207 Nutrition and Health., but not both.

### Food Production

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

### Natural Resources and Natural Resource Impacts

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| Course | Title | Credits |
|---|---|---|
| BIOL 343 | Biodiversity in the Caribean. | 3 |
| BIOL 465 | Conservation Biology.[1] | 3 |
| BIOL 553 | Neotropical Environments. | 3 |
| BREE 217 | Hydrology and Water Resources.[2] | 3 |
| BREE 322 | Organic Waste Management. | 3 |
| BREE 518 | Ecological Engineering. | 3 |
| ENVB 500 | Advanced Topics in Ecotoxicology. | 3 |
| GEOG 322 | Environmental Hydrology.[2] | 3 |

| | | |
|---|---|---|
| NRSC 333 | Pollution and Bioremediation. | 3 |
| WILD 401 | Fisheries and Wildlife Management. | 3 |
| WILD 421 | Wildlife Conservation.[1] | 3 |

[1] Note: Students take BIOL 465 Conservation Biology. or WILD 421 Wildlife Conservation., but not both.

[2] Note: Students take BREE 217 Hydrology and Water Resources. or GEOG 322 Environmental Hydrology., but not both.

# Social Science (6 credits)

## Economic and Resource Policy

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| Course | Title | Credits |
|---|---|---|
| AGEC 320 | Intermediate Microeconomic Theory. | 3 |
| AGEC 333 | Resource Economics.[1] | 3 |
| AGEC 430 | Agriculture, Food and Resource Policy. | 3 |
| AGEC 442 | Economics of International Agricultural Development. | 3 |
| ECON 225 | Economics of the Environment. | 3 |
| ECON 405 | Natural Resource Economics.[1] | 3 |

[1] Note: Students take AGEC 333 Resource Economics. or ECON 405 Natural Resource Economics., but not both.

## Social Change and Human Impacts

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| Course | Title | Credits |
|---|---|---|
| ENVR 421 | Montreal: Environmental History and Sustainability. | 3 |
| GEOG 340 | Sustainability in the Caribbean. | 3 |
| GEOG 406 | Human Dimensions of Climate Change. | 3 |
| GEOG 410 | Geography of Underdevelopment: Current Problems. | 3 |
| GEOG 498 | Humans in Tropical Environments. | 3 |
| GEOG 510 | Humid Tropical Environments. | 3 |
| HIST 510 | Environmental History of Latin America (Field). | 3 |
| SOCI 254 | Development and Underdevelopment. | 3 |

## Environment Management

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| Course | Title | Credits |
|---|---|---|
| AEBI 423 | Sustainable Land Use. | 3 |
| ANTH 418 | Environment and Development. | 3 |
| BREE 529 | GIS for Natural Resource Management.[1] | 3 |
| ENVB 437 | Assessing Environmental Impact. | 3 |
| ENVB 529 | GIS for Natural Resource Management.[1] | 3 |
| GEOG 201 | Introductory Geo-Information Science.[1] | 3 |
| ENVR 422 | Montreal Urban Sustainability Analysis. | 3 |
| GEOG 302 | Environmental Management 1. | 3 |
| GEOG 404 | Environmental Management 2. | 3 |
| GEOG 530 | Global Land and Water Resources. | 3 |
| MGPO 440 | Strategies for Sustainability. | 3 |

[1] Note: Students may take only one of BREE 529 GIS for Natural Resource Management., ENVB 529 GIS for Natural Resource Management., or GEOG 201 Introductory Geo-Information Science..