

HONOURS BSC ENVIRONMENTAL SCIENCE

Environmental Science is the interdisciplinary study of the environment, its functioning and its relationship to human activities.

Society has a growing need for specialists able to recognize, understand, solve and prevent environmental problems.

The Environmental Science program at the University of Ottawa focuses on the integration of traditional science disciplines (e.g. biology, earth sciences, chemistry, physics) to study the natural environment and the impact of human activities. The program consists of a core of basic science courses complemented by courses in various disciplines that address the scientific and societal aspects of environmental problems. In addition, the program offers three areas of specialization: conservation and biodiversity; global change; and environmental geochemistry and ecotoxicology. The final year entails an independent research project or equivalent units in advanced courses in the specialization.

This program is offered in English and in French.

Program Requirements

Co-operative education is available with this program.

The French immersion stream is available with this program.

Requirements for this program have been modified. Please consult the 2024-2025 calendars (<http://catalogue.uottawa.ca/en/archives/>) for the previous requirements.

Compulsory Courses at the 1000 level

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| BIO 1130 | Introduction to Organismal Biology | 3 Units |
| BIO 1140 | Introduction to Cell and Molecular Biology | 3 Units |
| CHM 1311 | Principles of Chemistry | 3 Units |
| CHM 1321 | Organic Chemistry I | 3 Units |
| EVS 1101 | Introduction to Environmental Science | 3 Units |
| GEG 1302 | Places and Spaces of Human Activity | 3 Units |
| GEO 1111 | Introduction to Earth Systems | 3 Units |
| GEO 1115 | Introduction to Earth Materials | 3 Units |
| MAT 1330 | Calculus for the Life Sciences I | 3 Units |
| MAT 1332 | Calculus for the Life Sciences II | 3 Units |
| PHY 1321 | Principles of Physics I | 3 Units |

Compulsory Courses at the 2000 level

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| BIO 2129 | Ecology | 3 Units |
| CHM 2353 | Descriptive Inorganic Chemistry | 3 Units |
| GEG 2320 | GIS and the Digital Earth | 3 Units |

Compulsory Courses at the 3000 level

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| BIO 3117 | Ecosystem Ecology | 3 Units |
| EVS 3101 | Environmental Issues | 3 Units |
| EVS 3102 | The Practice of Environmental Science ¹ | 3 Units |
| EVS 3120 | Environmental Microbiology | 3 Units |
| GEO 3342 | Introduction to Hydrogeology | 3 Units |

Compulsory Courses at the 4000 level

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| EVS 4010 | Field Course in Environmental Science | 3 Units |
| EVS 4904 | Seminar | 3 Units |

Optional Courses

3 course units from: 3 Units

GEO 2352 Geoscience Data Analysis

MAT 2379 Introduction to Biostatistics

3 optional course units from: 3 Units

BIO 4158 Applied Biostatistics

GEO 4306 Applied GIS for Science and Engineering

9 course units from: 9 Units

EVS 4009 Research Project

or 9 optional course units at the 3000 or 4000 level from the list of optional courses offered by the Faculty of Science, the Faculty of Engineering, the Department of Geography (GEG) or from one of the options in the Honours BSc in Environmental Science program

24 optional course units from the Conservation and Biodiversity Option, the Global Change Option, or the Environmental Geochemistry and Ecotoxicology Option 24 Units

6 optional course units offered by the Faculty of Science or the Faculty of Engineering 6 Units

Elective Courses

12 elective course units offered by the Faculty of Arts, the Faculty of Education, the Faculty of Law, the Faculty of Social Sciences or the Telfer School of Management 12 Units

Total: 120 Units

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The courses GEG 3302 and ENV 3302 can also be used to fulfill this requirement.

Conservation and Biodiversity Option

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| BIO 2135 | Animal Form and Function | 3 Units |
| BIO 2137 | Introduction to Plant Science | 3 Units |
| BIO 3115 | Conservation Biology | 3 Units |
| ENV 3321 | Human and Policy Dimensions of Environmental Change | 3 Units |

3 course units from: 3 Units

GEO 2113 Paleontology

GEO 2316 Introduction to Climate Science

GEO 2334 Quaternary Geology and Climate Change

9 optional course units at the 2000, 3000 or 4000 level from the list of optional courses offered by the Faculty of Science, the Faculty of Engineering, the Department of Geography (GEG) or from one of the options in the Honours BSc in Environmental Science program 9 Units

Global Change Option

6 optional course units from: 6 Units

GEG 2304 Climatology 3 Units

GEO 2316 Introduction to Climate Science 3 Units

GEO 2334 Quaternary Geology and Climate Change 3 Units

12 optional course units from: 12 Units

BIO 4150 Spatial Ecology

ENV 3321 Human and Policy Dimensions of Environmental Change

GEG 3102 Hydrology

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| GEG 3105 | Earth Observation | |
| GEG 3107 | Geography of Polar Regions | |
| GEG 3114 | Biogeography | |
| GEG 3302 | Natural Resource and Environmental Management | |
| GEG 3312 | Digital Earth Analysis Modeling | |
| GEG 4100 | Glaciology Field Research | |
| GEG 4101 | Permafrost Environments | |
| GEG 4118 | Environmental Impact Assessment | |
| GEG 4129 | Global Climate Change | |
| 6 optional course units at the 2000, 3000 or 4000 level from the list of optional courses offered by the Faculty of Science, the Faculty of Engineering, the Department of Geography (GEG) or from one of the options in the Honours BSc in Environmental Science program | | 6 Units |

Environmental Geochemistry and Ecotoxicology Option

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| BIO 2110 | Environmental Physiology | 3 Units |
| BIO 4146 | Ecotoxicology | 3 Units |
| BIO 4156 | Freshwater Ecology | 3 Units |
| CHM 2313 | Environmental Chemistry | 3 Units |
| CHM 2354 | Analytical Chemistry | 3 Units |
| GEO 2163 | Introduction to Mineralogy | 3 Units |
| 6 optional course units at the 2000, 3000 or 4000 level from the list of optional courses offered by the Faculty of Science, the Faculty of Engineering, the Department of Geography (GEG) or from one of the options in the Honours BSc in Environmental Science program | | 6 Units |

List of Optional Courses

Optional courses offered by the Faculty of Science, the Faculty of Engineering or the Department of Geography (GEG)

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|----------|--|---------|
| BCH 2333 | Introduction to Biochemistry | 3 Units |
| BIO 3103 | Field Biology | 3 Units |
| BIO 3124 | General Microbiology | 3 Units |
| BIO 3126 | General Microbiology Laboratory | 3 Units |
| BIO 3154 | Population and Community Ecology | 3 Units |
| BIO 3158 | Vertebrate Zoology | 3 Units |
| BIO 3176 | Animal Behaviour | 3 Units |
| BIO 3333 | Entomology | 3 Units |
| BPS 3102 | Principles of Toxicology and Pharmacology | 3 Units |
| CHG 4381 | Biochemical Engineering | 3 Units |
| CHM 2120 | Organic Chemistry II | 3 Units |
| CHM 2123 | Laboratory of Organic Chemistry II | 3 Units |
| CHM 3120 | Intermediate Organic Chemistry | 3 Units |
| CHM 3126 | Laboratory of Organic Chemistry | 3 Units |
| CHM 4155 | Polymer and Applied Chemistry | 3 Units |
| CHM 4354 | Principles of Instrumental Analysis | 3 Units |
| CVG 2132 | Fundamentals of Environmental Engineering | 3 Units |
| DVM 2105 | Introduction to International Development: Historical Perspectives | 3 Units |

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| DVM 3125 | Environmental Policies, Natural Resources Management and Sustainable Development | 3 Units |
| DVM 3135 | Food Security and International Development | 3 Units |
| GEG 3106 | Cities and Social Change | 3 Units |
| GEG 3303 | Health Geography | 3 Units |
| GEG 3306 | Quaternary Paleogeography | 3 Units |
| GEG 3312 | Digital Earth Analysis Modeling | 3 Units |
| GEG 4104 | Methodological and Theoretical Approaches in Geography and Environmental Studies | 3 Units |
| GEG 4118 | Environmental Impact Assessment | 3 Units |
| GEG 4120 | Spatial Data Science | 3 Units |
| GEG 4121 | Applications of Remote Sensing in the Polar Regions | 3 Units |
| GEO 2166 | Oceanography | 3 Units |
| GEO 2316 | Introduction to Climate Science | 3 Units |
| GEO 3382 | Geochemistry | 3 Units |
| GEO 4309 | Climate Change | 3 Units |
| GEO 4314 | Modern Ocean Processes | 3 Units |
| GEO 4315 | Global Biogeochemical Cycles | 3 Units |
| GEO 4341 | Advanced Physical Hydrogeology | 3 Units |
| GEO 4342 | Aqueous geochemistry | 3 Units |
| GEO 4354 | Quantitative Analysis in Geology | 3 Units |
| GEO 4382 | Advanced Geochemistry | 3 Units |
| MAT 3377 | Sampling and Surveys | 3 Units |
| SCI 3101 | The Public Communication of Science | 3 Units |