

# 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

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

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

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

### Compulsory Courses at the 4000 level

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

<sup>1</sup> The courses GEG 3302 and ENV 3302 can also be used to fulfill this requirement.

## Conservation and Biodiversity Option

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

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

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)

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

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