

ENVIRONMENTAL BIOLOGY (ENVB)

School of Environmental Sciences, Ontario Agricultural College

Note: admission, including internal or external transfer, to the Environmental Biology major has been suspended. For more information, please contact the School of Environmental Sciences, Ontario Agricultural College.

The Honours B.Sc. program in Environmental Biology combines a broad education in the life sciences with a more specialized understanding of the biological consequences of interactions between humans and the environment. This major prepares students for post-graduate work in environmental biology and related life sciences and provides a strong foundation for students wishing to pursue careers in teaching, government service or the private sector.

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Major Requirements (Honours)

This is a major within the degree: Bachelor of Science
(calendar.uoguelph.ca/undergraduate-calendar/degree-programs/bachelor-science-bsc/).

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major may wish to consult the Faculty Advisor. This major requires the completion of 20.00 credits. A minimum of 16.00 of these 20.00 must be science credits.

Students lacking Grade 12 or 4U Biology, Chemistry or Physics should follow the revised schedule of study for this major found at: https://www.uoguelph.ca/bsc/revised_SS/.

Code	Title	Credits
Semester 1		
BIOL*1070	Discovering Biodiversity	0.50
CHEM*1040	General Chemistry I	0.50
ENVS*1100	Fundamentals of Environmental Sciences	0.50
MATH*1080	Elements of Calculus I	0.50
PHYS*1080	Physics for Life Sciences	0.50
Semester 2		
BIOL*1090	Introduction to Molecular and Cellular Biology	0.50
CHEM*1050	General Chemistry II	0.50
PHYS*1070	Physics for Life Sciences II	0.50
0.50 Liberal Education electives		0.50
Select 0.50 credits from the following:		
CIS*1200	Introduction to Computing	0.50
CIS*1500	Introduction to Programming	0.50
MATH*1090	Elements of Calculus II	0.50
STAT*2040	Statistics I	0.50
Semester 3		
BIOC*2580	Introduction to Biochemistry	0.50

STAT*2040	Statistics I	0.50
TOX*2000	Principles of Toxicology	0.50
1.00 electives or restricted electives chosen from lists A, B, C and/or D OR Liberal Education elective ¹		1.00

Semester 4		
BIOL*2060	Ecology	0.50
ENVS*2090	Problem Solving in Environmental Biology	0.50
MBG*2040	Foundations in Molecular Biology and Genetics	0.50

1.00 electives or restricted electives chosen from lists A, B, C and/or D		1.00
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Semester 5		
2.50 electives or restricted electives chosen from lists A, B, C and/or D		2.50

Semester 6		
2.50 electives or restricted electives chosen from lists A, B, C and/or D		2.50

Semester 7		
ENVS*4001	Project in Environmental Sciences	0.50
2.00 electives or restricted electives chosen from lists A, B, C and/or D ²		2.00

Semester 8		
ENVS*4000	Toxicological Risk Assessment	0.50
ENVS*4002	Project in Environmental Sciences	0.50
1.50 electives or restricted electives chosen from lists A, B, C and/or D ²		1.50

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Or 1.50 if STAT*2040 Statistics I was taken in semester 2

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Students contemplating graduate studies are encouraged to take ENVS*4410 Introduction to Advanced Independent Research in semester 7 and ENVS*4420 Advanced Independent Research or ENVS*4430 Advanced Independent Research in 8

Restricted Electives

- A minimum of 1.00 credits of Liberal Education electives is required. The list of Liberal Education electives for B.Sc. students can be found at: <https://www.uoguelph.ca/bsc/>
- Select a minimum of 6.00 credits from the following lists of restricted electives during Semesters 3-8. 2.00 credits must be completed from List A. 1.00 credit must be completed from List B. A minimum 3.00 credits must be completed from List C.
- Students should note that some restricted electives are prerequisites for other restricted electives. Students should consult the most recent undergraduate calendar for specific requirements.

List A - Environmental Processes

Minimum of 2.00 credits from the following list:

Code	Title	Credits
BIOL*2400	Evolution	0.50
ENVS*2040	Plant Health and the Environment	0.50
ENVS*2060	Soil Science	0.50
ENVS*2330	Current Issues in Ecosystem Science and Biodiversity	0.50
ENVS*3010	Climate Change Biology	0.50

ENVS*3020	Pesticides and the Environment	0.50
ENVS*3040	Natural Chemicals in the Environment	0.50
ENVS*3150	Aquatic Systems	0.50
ENVS*3220	Terrestrial Chemistry	0.50
ENVS*3340	Environmental Data Analysis	0.50
ENVS*3370	Terrestrial Ecosystem Ecology	0.50

List B - Organismal Biology

Minimum of 1.00 credits from the following list:

Code	Title	Credits
BOT*2100	Life Strategies of Plants	0.50
BOT*3050	Plant Functional Ecology	0.50
ENVS*2080	Introduction to Environmental Microbiology	0.50
ENVS*3090	Insect Diversity and Biology	0.50
ENVS*4230	Biology of Aquatic Insects	0.50
MICR*3090	Mycology	0.50
ZOO*4070	Animal Behaviour	0.50

List C

Students in the Environmental Biology Major are required to take a minimum 3.00 restricted elective credits from any of the following lists:

Code	Title	Credits
Forestry		
ENVS*3230	Agroforestry Systems	0.50
ENVS*3250	Forest Health and Disease	0.50
ENVS*3270	Forest Biodiversity	0.50
ENVS*4350	Forest Ecology	0.50
Soil/Aquatic Systems		
ENVS*3060	Groundwater	0.50
ENVS*3080	Soil and Water Conservation	0.50
ENVS*3310	Soil Biodiversity and Ecosystem Function	0.50
ENVS*4030	Ecohydrology	0.50
ENVS*4090	Soil Management	0.50
ENVS*4160	Soil and Nutrient Management	0.50
ENVS*4320	Laboratory and Field Methods in Soil Biodiversity	1.00
ENVS*4390	Soil Variability and Land Evaluation	0.50
Environmental Toxicology/Pollutants		
BIOL*4350	Limnology of Natural and Polluted Waters	0.50
ENVS*3290	Waterborne Disease Ecology	0.50
ENVS*4180	Insecticide Biological Activity and Resistance	0.50
ENVS*4190	Biological Activity of Herbicides	0.50
ENVS*4370	Natural and Anthropogenic Compounds in the Environment	0.50
PBIO*4530	Plants and Environmental Pollution	0.50
TOX*3360	Environmental Chemistry and Toxicology	0.50
Conservation of Biodiversity and Plant Protection		
BIOL*3060	Populations, Communities and Ecosystems	0.50
BIOL*3130	Conservation Biology	0.50
BIOL*4150	Wildlife Conservation and Management	0.50
BIOL*4500	Natural Resource Policy Analysis	0.50
ENVS*2120	Introduction to Environmental Stewardship	0.50

ENVS*3210	Plant Pathology	0.50
ENVS*4070	Pollinator Conservation	0.50
ENVS*4100	Integrated Management of Invasive Insect Pests	0.50
ENVS*4260	Field Entomology	0.50
ENVS*4350	Forest Ecology	0.50
ENVS*4390	Soil Variability and Land Evaluation	0.50
PBIO*4000	Molecular and Cellular Aspects of Plant-Microbe Interactions	0.50
PBIO*4750	Genetic Engineering of Plants	0.50

Experiential Learning

ENVS*3330	Flexible Environmental Internship	0.50
IAEF*3500	Experiential Education	0.50

List D - Independent Research and Study Courses

Code	Title	Credits
BIOL*4610	Arctic Ecology	0.75
ENVS*4260	Field Entomology	0.50
ENVS*4410	Introduction to Advanced Independent Research	0.50
ENVS*4420	Advanced Independent Research	0.50
ENVS*4430	Advanced Independent Research	1.00
ENVS*4510	Topics in Environmental Sciences	0.50

Credit Summary

(20.00 Total Credits)

Code	Title	Credits
B.Sc. core credits		4.00
Required credits for the Major ³		5.00
Restricted elective credits for the Major (some restricted electives do not count as science electives towards degree therefore additional science electives may be required)		6.00
Approved Science electives ⁴		1.00
Liberal Education electives (#1 in restricted elective list)		1.00
Free electives - any approved elective for B.Sc. students.		3.00
Total Credits		20

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4.50 if STAT*2040 Statistics I is taken in Semester 2

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1.50 if STAT*2040 Statistics I is taken in Semester 2

Of the total credits required, students are required to complete 16.00 credits in science of which 2.00 credits must be at the 4000 level and an additional 4.00 credits must be at the 3000 or 4000 level.