

# WILDLIFE BIOLOGY AND CONSERVATION CO-OP (WBC:C)

## Department of Integrative Biology, College of Biological Science

The core of this major will provide students with an integrated foundation in three subjects necessary to understand the origins, interactions, and protection of biological diversity: evolution, ecology, and conservation biology. The program provides a strong foundation in science in 1<sup>st</sup> year, subject area courses in subsequent years and access to a wide variety of electives both in ecology, evolution and conservation as well as non-science. The program offers a sound scientific background in preparation for careers in resource management, conservation, ecological consulting, teaching, and government service. This major also qualifies students for post-graduate work in ecology, evolutionary biology, environmental sciences, or wildlife management.

## Program Requirements

The Co-op program in Wildlife Biology and Conservation is a five-year program, including four work terms. Students must follow the academic work schedule as outlined below (also found on the Co-operative Education website: <https://www.recruitguelph.ca/cecs/>).

### Wildlife Biology and Conservation Academic and Co-op Work Term Schedule

Year	Fall	Winter	Summer
1	Academic Semester 1	Academic Semester 2	Off
2	Academic Semester 3 COOP*1100	Academic Semester 4	COOP*1000 Work Term I
3	COOP*2000 Work Term II	Academic Semester 5	Off
4	Academic Semester 6	COOP*3000 Work Term III	COOP*4000 Work Term IV
5	Academic Semester 7	Academic Semester 8	N/A

Please refer to the Co-operative Education program policy with respect to work term performance grading, work term report grading and program completion requirements.

For additional program information students should consult with their Co-op Co-ordinator and Co-op Faculty Advisor, listed on the Co-operative Education web site.

## Credit Summary

(22.00 Total Credits)

Code	Title	Credits
	First year science core	4.00
	Required science courses semester 3-8	6.50
	Restricted electives (#2, 3, 4 and 5 in restricted electives list) **	4.50
	Approved Science electives	1.00
	Liberal Education Electives (#1 in restricted electives list)	1.00

Free electives - any approved elective for B.Sc. students	3.00
Co-op Work Terms	2.00
<b>Total Credits</b>	<b>22</b>

\*\*

Please note not all restricted electives are considered science electives for B.Sc. students. If the non-science restricted electives are chosen, students are reminded that they will still be responsible for meeting the minimum of 16.00 credits in science and that the credit summary may vary from what is specified.

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

## Major (Honours Program)

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. A minimum total of 20.00 credits is required to complete the major.

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/](https://www.uoguelph.ca/bsc/revised_SS/).

Code	Title	Credits
<b>Semester 1 - Fall</b>		
BIOL*1070	Discovering Biodiversity	0.50
CHEM*1040	General Chemistry I	0.50
MATH*1080	Elements of Calculus I	0.50
PHYS*1080	Physics for Life Sciences	0.50
	0.50 Liberal Education electives	0.50
<b>Semester 2 - Winter</b>		
BIOL*1080	Biological Concepts of Health	0.50
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
<b>Summer Semester</b>		
	No academic semester or work term	
<b>Semester 3 - Fall</b>		
BIOC*2580	Introduction to Biochemistry	0.50
MBG*2040	Foundations in Molecular Biology and Genetics	0.50
COOP*1100	Introduction to Co-operative Education	0.00
	1.50 electives or restricted electives	1.50
<b>Semester 4 - Winter</b>		
BIOL*2060	Ecology	0.50
BIOL*2400	Evolution	0.50
STAT*2230	Biostatistics for Integrative Biology	0.50
	1.00 electives or restricted electives	1.00
<b>Summer Semester</b>		
COOP*1000	Co-op Work Term I	0.50
<b>Fall Semester</b>		
COOP*2000	Co-op Work Term II	0.50

**Semester 5 - Winter**

BIOL*3040	Methods in Evolutionary Biology	0.50
BIOL*3060	Populations, Communities and Ecosystems	0.50
BIOL*3130	Conservation Biology	0.50
1.00	electives or restricted electives	1.00

**Summer Semester**

No academic semester or work term

**Semester 6 - Fall**

BIOL*3010	Laboratory and Field Work in Ecology	0.50
2.00	electives or restricted electives	2.00

**Winter Semester**

COOP*3000	Co-op Work Term III	0.50
-----------	---------------------	------

**Summer Semester**

COOP*4000	Co-op Work Term IV	0.50
-----------	--------------------	------

**Semester 7 - Fall**

BIOL*4110	Ecological Methods <sup>1</sup>	1.00
BIOL*4150	Wildlife Conservation and Management	0.50
1.00	electives or restricted electives	1.00

**Semester 8 - Winter**

BIOL*4500	Natural Resource Policy Analysis	0.50
2.00	electives or restricted electives	2.00

1

For students considering graduate research programs, BIOL\*4110 Ecological Methods may be substituted by an independent research course (1.00 credits minimum). Course options include: (IBIO\*4500 Research in Integrative Biology I and IBIO\*4510 Research in Integrative Biology II), IBIO\*4521 Thesis in Integrative Biology/IBIO\*4522 Thesis in Integrative Biology.

**Restricted Electives**

Note that some courses have prerequisites, so be sure to consult the undergraduate calendar.

Code	Title	Credits
1.	A minimum of 1.00 credits of Liberal Education electives is required. <sup>2</sup>	1.00
2.	A minimum of 0.50 credits of the following:	
BOT*2100	Life Strategies of Plants	0.50
ZOO*2090	Vertebrate Structure and Function	0.50
ZOO*2700	Invertebrate Morphology & Evolution	0.50
3.	A minimum of 0.50 credits of the following:	
BOT*3050	Plant Functional Ecology	0.50
ZOO*3600	Comparative Animal Physiology I	0.50
4.	A minimum of 0.50 credits of the following:	
BIOL*3020	Population Genetics	0.50
BIOL*4120	Evolutionary Ecology	0.50
5.	A minimum of 3.00 credits from any of the following lists of courses. <sup>3</sup>	3.00

2

The list of Liberal Education electives for B.Sc. students can be found at: <https://www.uoguelph.ca/bsc/>

3

The courses are broken into disciplines for which they are most suitable to help students tailor their electives towards a specific field if desired.

Some of the restricted electives will require additional courses outside of the required courses listed in Semesters 3-8

Please note not all restricted electives are considered science electives for B.Sc students. If the non-science restricted electives are chosen, students are reminded that they will still be responsible for meeting the minimum of 16.00 credits in science and that the credit summary may vary from what is specified below.

Code	Title	Credits
<b>Evolution</b>		
BIOL*3020	Population Genetics	0.50
BIOL*3300	Applied Bioinformatics	0.50
BOT*3710	Plant Diversity and Evolution	0.50
ENVS*3090	Insect Diversity and Biology	0.50
ENVS*3180	Sedimentary Environments *	0.50
MBG*3040	Molecular Biology of the Gene	0.50
MBG*4110	Epigenetics *	0.50
ZOO*2700	Invertebrate Morphology & Evolution	0.50
ZOO*3050	Developmental Biology	0.50
<b>Ecology</b>		
ANSC*3180	Wildlife Nutrition *	0.50
BIOL*3450	Introduction to Aquatic Environments	0.50
BIOL*3670	Introduction to Wildlife Rehabilitation	0.50
BIOL*3680	Wildlife Rehabilitation: Caring for Sick, Injured, and Orphaned Wildlife	0.50
ENVS*3000	Nature Interpretation	0.50
ENVS*3270	Forest Biodiversity *	0.50
ENVS*4350	Forest Ecology *	0.50
NUTR*3210	Fundamentals of Nutrition	0.50
ZOO*4300	Marine Biology and Oceanography *	0.75
ZOO*4570	Marine Ecological Processes *	0.50
<b>Conservation</b>		
BIOL*4350	Limnology of Natural and Polluted Waters *	0.50
ECON*1050	Introductory Microeconomics	0.50
ECON*2100	Economic Growth and Environmental Quality **	0.50
ENVS*2030	Meteorology and Climatology	0.50
ENVS*3010	Climate Change Biology	0.50
FARE*2700	Survey of Natural Resource Economics **	0.50
GEOG*1220	Human Impact on the Environment **	0.50
GEOG*2480	Mapping and GIS	0.50
GEOG*3480	GIS and Spatial Analysis	0.50
GEOG*4230	Environmental Impact Assessment *	0.50
GEOG*4480	Applied Geomatics	1.00
<b>Integrative/Cross-Disciplinary</b>		
IBIO*4500	Research in Integrative Biology I	1.00
IBIO*4510	Research in Integrative Biology II	1.00
IBIO*4521	Thesis in Integrative Biology	1.00
IBIO*4522	Thesis in Integrative Biology	1.00
MCB*2050	Molecular Biology of the Cell	0.50

ZOO*3610	Lab Studies in Animal Physiology I	0.25
ZOO*3620	Comparative Animal Physiology II	0.50
ZOO*3630	Lab Studies in Animal Physiology II	0.25
ZOO*3700	Integrative Biology of Invertebrates *	0.50
ZOO*4070	Animal Behaviour	0.50
ZOO*4910	Integrative Vertebrate Biology *	0.5
ZOO*4920	Lab Studies in Ornithology	0.25
ZOO*4940	Lab Studies in Herpetology	0.25
ZOO*4950	Lab Studies in Mammalogy	0.25

**Field Courses**

BIOL*4410	Field Ecology	0.75
BIOL*4610	Arctic Ecology	0.75
BIOL*4700	Field Biology	0.50
BIOL*4710	Field Biology	0.25
BIOL*4800	Field Biology	0.50
BIOL*4810	Field Biology	0.25
BIOL*4900	Field Biology	0.50

\*

Require additional courses outside of the required courses listed in Semesters 3-8

\*\*

Please note not all restricted electives are considered science electives for B.Sc. students. If the non-science restricted electives are chosen, students are reminded that they will still be responsible for meeting the minimum of 16.00 credits in science and that the credit summary may vary from what is specified.