

UNIVERSITY OF WATERLOO | FACULTY OF SCIENCE

BIOLOGY

UNIVERSITY OF
WATERLOO



A sample of butterflies from our collection of over 5,000 Lepidoptera. As large as our collection is, it only contains about 3% of the world's total species of butterflies and moths.

BIOLOGY

uwaterloo.ca/future/programs/biology

We're cultured.

Explore all aspects of life and living creatures – from cells and genes to species and diversity.

Some of the greatest scientific discoveries have occurred within the field of biology, including the mapping of the human genome, identifying the structure of DNA, and how photosynthesis works. All of these revelations happened because dedicated scientists looked at the world a little differently.

On top of these game-changing discoveries, biologists work to better their instrumentation and the tools they use – think microscopes – giving way to interdisciplinary exploration that will shape our future.

SAMPLE CO-OP POSITIONS

- › Genetic Counselling Assistant
- › Field and Lab Technician
- › Bioinformatics Research Assistant
- › Animal Care & Research Assistant
- › Molecular Toxicology Laboratory Research Assistant

SAMPLE CO-OP EMPLOYERS

- › Environment and Climate Change Canada
- › Public Health Agency of Canada
- › Sunnybrook Health Sciences Centre
- › Canadian Cancer Society
- › Health Canada, Hazard Identification Division

POSSIBLE CAREER FIELDS/PATHS

- › Health care
- › Microbiology
- › Genetics
- › Veterinary science
- › Biological research



Earn your degree, plus a **Biotechnology Technician diploma**, through our partnership with Conestoga College.

uwaterloo.ca/biology/biotech-diploma

uwaterloo.ca/science

SPECIALIZATIONS IN BIOLOGY

ANIMAL BIOLOGY

Of particular interest to those students wanting to work with animals or conduct research with animals, this specialization focuses on the biology and current conservation issues of different animal groups.

BIOTECHNOLOGY

Apply your knowledge of biology to focus on the history and modern application of biotechnology – the development of products or processes that use biological systems for a specific use. Popular examples of biotechnology are protein production (often used in the pharmaceutical industry), biofuel development, and bioremediation (removal of pollutants using biological organisms).

ENVIRONMENTAL BIOLOGY

Study the relationships among organisms and their environments, with a focus on ecology and biodiversity. Bring together all of the scientific disciplines to understand how changes and manipulations to an environment can alter organisms and their populations.

MICROBIOLOGY

Learn about microscopic organisms, from bacteria to viruses, and how they reproduce, are cultured, and impact other biological systems, including humans.

MOLECULAR GENETICS

Understand the structure and function of genes at the molecular level, how they are expressed, and how variations and mutations within them work.

PLANT BIOLOGY

Focus on plant structure and functions, as well as how plants grow, reproduce, and their many uses. Learn about modern botany and how biologists look at plant diseases, genetics, and management.

BRINGING IT ALL TOGETHER

BIOL 499 SENIOR HONOURS PROJECT

This course is designed to simulate “real-world” science research, where you work with a supervisor, select a project, submit a proposal, design and perform the research, and submit a final report. It may sound simple, but this course will test all of the skills and knowledge you have acquired within your undergraduate degree, including laboratory methodologies, time management, technical writing, and data analysis.

Exceptional students looking for careers in research or wishing to expand their education into graduate studies will thrive in this challenging and extremely rewarding course.

Curious about the types of projects our students work on? Shalini completed her project in 2019 titled Protein Modelling Investigation of a *Bacillus thuringiensis* Cry Protein, and won the prestigious Marilyn Griffith Excellence Award.

SKILLS ATTAINED WITHIN THIS MAJOR

- › Technical writing
- › Organization and time management
- › Laboratory methodologies and data analysis
- › Team work
- › Logical thinking

COMMON MINORS

- › Psychology
- › Medical Physiology
- › Chemistry



Available in both the
**CO-OP AND
REGULAR**
streams of study



Apply via the
LIFE SCIENCES
entry program on
OUAC, selecting
BIOLOGY
as the major



COURSE OUTLINE

SAMPLE FIRST-TERM SCHEDULE

* Labs

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	Zoology 1 hrs		Zoology 1 hrs	
Ecology 1 hr	Chemistry 3 hrs *	Ecology 1 hr		Ecology 1 hr
Elective 1 hr		Elective 1 hr		Elective 1 hr
Chemistry 1 hr		Chemistry 1 hr		Chemistry 1 hr
Zoology 3 hrs *	Cell Biology 1.5 hrs		Cell Biology 1.5 hrs	
	Cell Biology 3 hrs *			

YEAR 1 (FALL)

BIOL 110 Introductory Zoology
BIOL 130/130L Introductory Cell Biology/Lab
BIOL 150 Organismal and Evolutionary Ecology
CHEM 120/120L General Chemistry 1/Lab
 1 Elective

YEAR 1 (WINTER)

BIOL 165 Diversity of Life
BIOL 239 Genetics
CHEM 123/123L General Chemistry 2/Lab
ENGL/SPCOM 193 Communication in the Sciences
MATH 114, MATH 127 or **PHYS 111** (Linear Algebra, Calculus, or Physics)

YEAR 2

BIOL 120 Introduction to Plant Structure and Function
BIOL 240/240L Fundamentals of Microbiology/Lab
BIOL 273 Principles of Human Physiology
CHEM 237/237L Introductory Biochemistry/Lab
CHEM 266/266L Basic Organic Chemistry/Lab
STAT 202 Introductory Statistics for Scientists
 1 Science Elective
 3 Electives

YEAR 3

BIOL 308 Principles of Molecular Biology
BIOL 359 Evolution 1: Mechanisms
 5 Biology Electives (300-level or higher)
 3 Electives

YEAR 4

6 Biology Electives (300-level or higher)
 4 Electives

Course outline and schedule are subject to change at any time.
 Course sequence may vary for students who choose the co-op system of study.

ugradcalendar.uwaterloo.ca/group/uwaterloo-faculty-of-science

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