

University of Guelph
Learning Outcomes for the B.Sc. Honours Major in
Biodiversity (BSCH.BIOD)

The Biodiversity major provides broad education in the diversity and evolution of life and more specialized understanding of biology at the level of the organism. It is the most flexible of the majors offered by the Department of Integrative Biology and allows students to design a customized program around specific interests. The major qualifies students for postgraduate work in biodiversity, botany, zoology and other life sciences and provides a sound science background for students wishing to pursue professional life science degrees or careers in teaching, government service or the private sector.

A. GENERAL SKILLS

1. Problem Solving & Critical Thinking

- Critically evaluate ideas and arguments by gathering and integrating relevant information, assessing its credibility, and synthesizing evidence to formulate a position.
- Identify problems and independently propose solutions using creative approaches, acquired through interdisciplinary experiences, and a depth and breadth of knowledge/expertise.
- Accurately interpret and use numerical information to evaluate and formulate position.

2. Communication

- Accurately and effectively communicate ideas, arguments and analyses, to range of audiences, in graphic, oral and written form.

3. Professional and Ethical Behaviour

- Demonstrate personal and professional integrity by respectfully considering diverse points of view and the intellectual contribution of others, and by demonstrating commitment to honesty and equity, and awareness of sustainability, in scientific practice and society at large.
- Collaborate effectively as part of a team by demonstrating mutual respect, leadership, and an ability to set goals and manage tasks and timelines.
- Plan for professional growth and personal development within and beyond the undergraduate program.

B. DEGREE RELATED SKILLS & KNOWLEDGE

1. Scientific Method

- Apply scientific methods and processes by formulating questions, designing investigations and synthesizing data to draw conclusions and make scientifically-based decisions.
- Generate and interpret scientific data using quantitative, qualitative and analytical methodologies and techniques.

2. Breadth & Depth of Understanding in a Particular Scientific Discipline

- Apply the core concepts of math, physics, chemistry and biology to a chosen scientific discipline.
- Demonstrate knowledge of the ethical, economic, commercial and social implications of scientific discovery and technological innovation.

- Interpret current scientific concepts and gaps in knowledge (and methods) in light of the historical development of a chosen discipline.
- *Evaluate the origin, distribution and challenges of biodiversity at various spatial and temporal scales.*
- *Summarize examples of how changes in biodiversity have economic and social impacts through the provision of ecosystem goods and services.*
- *Apply critical thinking, analysis, and independent inquiry skills to complex interdisciplinary issues in biodiversity recognizing the inherent complexity and uncertainty in its assessment.*
- *Synthesize knowledge and effectively communicate in both written and oral forms about a specific biodiversity issue in society.*

3. Scientific Technology & Techniques in a Scientific Discipline

- Apply contemporary research methods, skills and techniques to conduct independent inquiry in a chosen scientific discipline.
- *Quantify variation within and among taxa and implement sampling methods and analyses utilizing data from real collections or surveys in biodiversity research, including expertise in specific taxonomic groups of interest.*
- *Work collaboratively with peers in community-engaged research to propose, execute and report on a biodiversity issue.*

Note: Italics indicates major specific outcomes; non-italic are BSc learning outcomes.