

DEPARTMENT OF BIOLOGY

Brandon University

Faculty of Science

This document is meant as a planning guide only. Students are advised to consult the Chair of the Department if they have questions about the program.

The Department of Biology offers **3- and 4- year degrees** as two streams that share a common set of core courses.

The **Biological Science stream**:

- provides students with a broad understanding of the major fields in Biology (e.g., biodiversity, genetics, cell biology, ecology, evolution, physiology, and phylogenetic systematics) and how these fields intersect with those in related disciplines, and
- prepares students for careers in agriculture, education, food protection, government, industry, research, and other fields that rely on expertise in the life sciences.

The **Biomedical Science stream**:

- provides students with the skills and training required to work in biomedical and health related research or employment sectors, and
- prepares students for a health professional program (e.g., optometry, medicine, dentistry, pharmacy, physiotherapy, chiropractic therapy, occupational therapy, forensic science, audiology, speech pathology, medical laboratory technology, veterinary medicine, etc.).

Program outcomes:

We prepare students enrolled in the Biological Science and the Biomedical Science stream for success by ensuring that they acquire:

- an understanding of the diversity of life (animal, microbial, and plant) and organismal biology,
- an understanding of key, unifying concepts in Biology (e.g., ecology, evolution, gene function, cell chemistry and physiology),
- an understanding of the basic structures and fundamental processes of life at the molecular, cellular, organismal and population levels,
- an understanding of theoretical approaches and important laboratory and field methodologies used currently in Biology,
- an understanding of emerging areas in biomedical science including physiology, microbiology, immunology, endocrinology, molecular genetics, epigenetics, bioinformatics, infectious disease biology, genomics and development,
- an understanding of current issues and challenges within Biology,
- the skills to use the scientific method for problem solving and experimental design,
- the ability to collect, analyze, interpret and present quantitative and qualitative data,
- fundamental and advanced biological laboratory techniques and skills, and
- the ability to communicate effectively in written and oral forms.

Careers and Graduate School Opportunities include:

Chiropractic; Conservation Officer; Dentistry; Environmental Consulting; Graduate School (Masters and Doctorate in all major fields of biology); Medicine; Midwifery; Occupational Therapy; Optometry; Pharmacy; Physical Therapy; Research Assistant; Teacher; Veterinary Medicine; Wildlife Biologist

Example program schedule for a 4-year Honours degree in Biology

First year			
FALL SEMESTER		WINTER SEMESTER	
COURSE TITLE	CR	COURSE TITLE	CR
15:162 Cells, Genetics and Evolution	3	15:163 Biodiversity, Functions and Interactions	3
18:160 General Chemistry I	3	18:170 General Chemistry II	3
62:171 Introduction to Statistics	3	62:172 Introduction to Statistical Inference	3
One of 62:150 Pre-Calculus, 62:160 Computer Science I, 62:181 Calculus I, 62:182 Linear Algebra I, 74:151 General Physics I* or 74:161 Foundations of Physics I*	3	One of 62:161 Computer Science II, 62:191 Calculus II, 74:152 General Physics II* or 74:162 Foundations of Physics II*	3
English (30:146, 30:151, 30:152, 30:153, 30:161, or 30:162); Note: 30:146 (6 cr), 30:161 and 30:162 fulfill the liberal education requirement	3-6	English (30:146, 30:151, 30:152, 30:153, 30:161, or 30:162); Note: 30:146 (6 cr), 30:161 and 30:162 fulfill the liberal education requirement	3
Total Credits	15	Total Credits	15

Second year			
FALL SEMESTER		WINTER SEMESTER	
COURSE TITLE	CR	COURSE TITLE	CR
15:273 General Ecology	3	Two of the following three courses: 15:262 Plant Biology, 15:267 Animal Diversity, 15:269 Microbiology	6
15:282 Principles of Genetics	3		
18:261 Organic Chemistry I	3	18:271 Organic Chemistry II	3
62:272 Applied Statistics	3	Elective Biology course or course for minor	3
Humanities / Social Science Elective OR elective Biology course OR course for minor	3	Humanities / Social Science Elective OR elective Biology course OR course for minor	3
Total Credits	15	Total Credits	15

Third year			
FALL SEMESTER		WINTER SEMESTER	
COURSE TITLE	CR	COURSE TITLE	CR
15:350 Evolution	3	15:370 Molecular Cell Biology	3
18:363 Biochemistry I (recommended)	3	18:373 Biochemistry II (recommended)	3
An additional 18 credit hours of 300 and 400 level Biology courses of which 6 must be at the 400 level	3-9	An additional 18 credit hours of 300 and 400 level Biology courses of which 6 must be at the 400 level	3-9
Elective non Biology courses or courses for minor	0-6	Elective non Biology courses or courses for minor	0-6
Total Credits	15	Total Credits	15

* = strongly recommended

Fourth Year			
FALL SEMESTER		WINTER SEMESTER	
COURSE TITLE	CR	COURSE TITLE	CR
Completing requirement for additional 18 credit hours of Biology (as above)	3-15	Completing requirement for additional 18 credit (as above)	3-15
Elective non Biology courses for minor	0-3	Elective non Biology courses for minor	0-3
15:449 Undergraduate Thesis	3	15:449 Undergraduate Thesis	3
Total Credits	15	Total Credits	15