

# BIOLOGY (B.S.)

The Bachelor of Science program in Biology is designed to stimulate intellectual and personal growth through an examination of the fundamental properties of living systems, the application of experimental and descriptive methods of discovery, and the consideration of the social, ethical, and aesthetic aspects of biological knowledge. The B.S. program also provides undergraduate preparation for technical employment or post-baccalaureate study in graduate school or for professions such as medicine, dentistry, veterinary medicine, teaching, and natural resource management. A Biology major considering graduate or professional school should confer with a Biology advisor to plan a program to meet the student's specific needs and assure entrance into such a school.

## Integrative Studies Requirements

40 credits minimum

Code	Title	Credits	Completed
<b>Major Requirements (68 credits)</b>			
<i>Core Courses (20 Credits)</i>			
INBIO-110	Cells and Molecules	4	_____
INBIO-111	Evolution & Ecology	4	_____
BIO-311	Genetics	4	_____
BIO-312	Cell Biology	4	_____
BIO-313	Population & Community Ecology	4	_____
<i>Upper-Level BIO Electives (20 Credits)</i>			
20 credits in 300- or 400-level BIO/ INBIO courses <sup>1</sup>		20	_____
<i>Related Science or Math Courses (28 Credits)</i>			
INCHEM-111	General Chemistry	4	_____
CHEM-112	Gen Chemistry II	4	_____
CHEM-221	Organic Chemistry I	4	_____
CHEM-222	Organic Chemistry II	4	_____
INPHYS-141 or INPHYS-241	College Physics I University Physics I	4	_____
PHYS-142 or PHYS-242	College Physics II University Physics II	4	_____
MATH-141 or PSYC-251	Introductory Statistics Psychological Statistics	4	_____
<b>Total Credits</b>		<b>68</b>	_____

<sup>1</sup> Select any five 300- or 400-level BIO or INBIO courses to bring total credits in Biology to 40 credits. ENST-353 Restoration Ecology and ENST-461 Freshwater Science and Systems also count toward the upper-level Biology requirement.

## Electives

Select courses to reach a total of 120 credits for the degree.

## Degree Requirements

120 credits

40 credits at the upper-level

## Upon Completion of the Biology B.S. degree, students will be able to demonstrate understanding in the following fundamental areas of the biological sciences:

- Biological Diversity, the diversity of subspecies, species, and higher level taxa or clades, the phylogenetic relationships of those taxa, and the features that distinguish specific lineages or taxa. This concept does not include genetic or phenotypic diversity of individuals within a species.;
- Evolution, consisting of change in the hereditary characteristics of groups of organisms over the course of generations. It encompasses several subdisciplines: behavioral evolution, evolutionary developmental biology, evolutionary ecology, evolutionary genetics, evolutionary systematics, paleontology, and molecular evolution.;
- Sub-organismal biology, the structure, function, and evolution of the components of individual organisms, from the molecular level to tissue and /or organ-system level. This includes, but is not limited to, biochemistry and metabolism, proteomics, genetics, molecular and cell biology, neurobiology, and physiology.;
- Organismal biology, referring to individual organisms and their structures and processes, such as reproduction, development, life cycle events, ecophysiology, behavior, feeding, locomotion, dispersal, and mortality. Whether applied to single-celled microorganisms or to complex multicellular organisms, 'organismal' denotes specific modes of survival and reproduction and refers to the target or object of natural selection.;
- Supra-organismal biology, referring to populations, communities, ecosystems and other higher levels of biological organization such as landscape, biome or biosphere. It includes focus on patterns of diversity, community succession, species interactions, behavioral ecology, population dynamics, trophic structure, nutrient cycling, and energy flow.
- Development of testable hypotheses, design of experiments to test hypotheses, and conducting experiments including data collection, analysis, interpretation and presentation. They will also be able to effectively search computer databases for relevant literature (primary and secondary) on scientific topics.
- Critical thinking and communication skills, both oral and written, for the purposes of conveying biological information to professional scientists and the lay public.
- Intellectual independence, scientific literacy, and an appreciation for the connections between biological science and society.