

# **BIOLOGY AREA REQUIREMENTS**

The breadth of the biological sciences requires that students have foundational knowledge in three core areas: 1) Cellular & Molecular Biology, 2) Organismal Structure & Function, and 3) Organismal Diversity. Students pursuing Biology ScB and AB concentrations will successfully complete at least one course in each of these areas. Courses which fulfill each of these area requirements are listed below.

Please note the following:

- No course substitutions are allowed for the approved area courses listed below.
- Not all courses are offered every year. Courses @ Brown should be consulted for the most current course offerings.
- A course listed in more than one area can satisfy only one area requirement, e.g. Bio 1310 could be applied to either the Area 1 or Area 2 requirement but not both.

## **Area 1 - Cellular & Molecular Biology**

Fundamental understanding of cellular processes at the molecular level is essential to all biological sciences. Billions of molecules assemble in organized ways to form cells with the ability to respond to the environment, carry out distinctive functions, and ultimately create life. Courses in the Cell & Molecular Biology Area requirement draw on the physical sciences to explore the basic mechanisms governing living systems at the cellular level.

## **Area 2 - Organismal Structure & Function**

Understanding the form and function of life is essential to biology whether the organism of interest is a plant, invertebrate or vertebrate animal. Organismal structure forms the basis of taxonomic categorization and in this way is essential to understanding the phylogenetic history of life on Earth. The physical and biochemical functions necessary to maintain healthy organs, organ systems and mechanics of locomotion are important concepts for students with interests ranging from plant biology to human health.

## **Area 3 - Organismal Diversity**

The diversity and distribution of life on Earth is a function of the evolutionary relationships that exist between and within major taxonomic groups, the dynamics of populations, and the ecological processes that govern species interactions within communities. The patterns and processes that govern interactions among organisms over space and time are important concepts for students in the biological sciences to understand.

<b>Area 1: Cellular &amp; Molecular Biology</b>	<b>Area 2: Organismal Structure &amp; Function</b>	<b>Area 3: Organismal Diversity</b>
Introductory Biochemistry (BIOL 0280)	Biological Design: Structural Architecture of Organisms (BIOL 0400)	Diversity of Life (BIOL 0210)
Genetics (BIOL 0470)	Invertebrate Zoology (BIOL 0410)	The Ecology and Evolution of Infectious Disease (BIOL 380)
Cell and Molecular Biology (BIOL 0500)	Inquiry in Plant Biology: Analysis of Plant Growth, Reproduction and Adaptive Responses (BIOL 0440)	Invertebrate Zoology (BIOL 0410)
Introductory Microbiology (BIOL 0510)		Principles of Ecology (BIOL 0420)
Principles of Immunology (BIOL 0530)	Principles of Physiology (BIOL 0800)	The Evolution of Plant Diversity (BIOL 0430)
Biology of the Eukaryotic Cell (BIOL 1050)	Biomaterials (BIOL 1120)	Evolutionary Behavioral Ecology (BIOL 450)
	Hormones and Behavior (BIOL 1155)	Evolutionary Biology (BIOL 0480)
Developmental Biology (BIOL 1310)	Developmental Biology (BIOL 1310)	Terrestrial Biogeochemistry and the Functioning of Ecosystems (BIOL 1480)
Conservation in the Genomics Age (BIOL 1515)	Biology of Reproduction (BIOL 1330)	Conservation in the Genomics Age (BIOL 1515)
21 <sup>st</sup> Century Applications in Cell and Molecular Biology (BIOL 1810) <i>Previously BIOL 0810</i>	Animal Locomotion (BIOL 1800)	Animal Locomotion (BIOL 1800)
	Toxicology (BIOL 1865)	Comparative Biology of the Vertebrates (BIOL 1880)
Environmental Health and Disease (BIOL 1820)	Environmental Health and Disease (BIOL 1820)	Environmental Science in a Changing World (ENVS 0490)
Toxicology (BIOL 1865)	Comparative Biology of the Vertebrates (BIOL 1880)	
Principles of Neurobiology (NEUR 1020)	The Brain: An Introduction to Neuroscience (NEUR 0010)	