

Department of Biology Undergraduate Major Learning Outcomes (approved January 2017)

Having completed a major in Biology, a student will have:

1. An understanding of the process and application of scientific inquiry; the ability to develop well-reasoned hypotheses and to design experiments by which to test them.
2. An ability to apply mathematical and statistical approaches to understanding biological information; an ability to interpret graphical representations of biological information.
3. An ability to use modeling and simulation to study biological systems.
4. A broad-based knowledge of biology at multiple levels and in interdisciplinary contexts; competency in reading, understanding, and critically evaluating scientific information across major areas of the curriculum, from molecules to ecosystems.

Fundamental Concepts:

Evolution and biological diversity: all living organisms are genetically-related; the diversity of life evolved over time by processes of mutation, selection, and genetic change.

Structure and function: Basic units of structure give rise to the function of all living things.

Information flow, exchange, and storage: Properties of organisms emerge from the flow, exchange, expression, and storage of genetic information.

Pathways and transformations of energy and matter: Biological systems grow and change by processes based on chemical transformation pathways and are governed by the laws of thermodynamics.

Systems: Living systems are interconnected and interacting.

5. An ability to communicate clearly, orally and in writing, with both general audiences and professional audiences in relevant disciplines.
6. An ability to understand the relationship between science and modern society as well as the potential impact of scientific discovery on the future.