



Common Course Number: BSC-2011

Course Title: Principles of Biology 2

Catalog Course Description:

This is the second in a sequence of two courses that deals with the principles of modern biology. It covers organic evolution, phylogeny, biological diversity, overviews of plant and animal form and function, behavior, as well as population, community, and ecosystem ecology.

Credit Hours: 3

Prerequisites: BSC 2010, BSC 2010L

Pre- or Corequisites: BSC 2011 L

Course Competencies:

Competency 1: Upon successful completion of this course, the student will demonstrate knowledge of the mechanisms of micro- and macroevolution by:

- a. explaining the central role of evolution in modern biology.
- b. describing the development of the Darwinian view of evolution.
- c. identifying the steps of natural selection and discussing its role as the major agent of evolution.
- d. analyzing the evidence that has accumulated since Darwin's time in support of the theory of evolution.
- e. identifying the population as the theater of evolution, and explaining the role of the Hardy-Weinberg equilibrium as a baseline for understanding microevolution, and the nature of the agents of microevolution that operate within populations.
- f. distinguishing the modes of natural selection.
- g. discussing the various species concepts and the process of speciation.
- h. analyzing the major evolutionary events and trends that have shaped life on Earth throughout its history.

Competency 2: Upon successful completion of this course, the student will demonstrate knowledge of the nature of biological diversity by:

- a. describing the current theory of the origin of life on Earth.
- b. explaining the fashion in which organisms are classified.
- c. describing the diversity of viruses, prokaryotes, protists, fungi, plants, and animals.
- d. analyzing the similarities and differences among the domains and kingdoms of life.

Competency 3: Upon successful completion of this course, the student will demonstrate knowledge of the form and function of plants and animals by:

- a. describing the levels of organization found among plants and animals.
- b. identifying the structural and functional features of plant and animal tissue types.
- c. discussing the structural and functional features of animal organ systems.
- d. comparing and contrasting the ways in which plants and animals are structured and function.

Competency 4: Upon successful completion of this course, the student will demonstrate knowledge of the relationships of organisms with their environment by:

- a. diagramming the levels of organization of interest in ecology.
- b. discussing the factors involved in producing fluctuations in and regulating the size of populations.
- c. analyzing the nature of the interactions existing in communities.
- d. describing the factors that affect ecosystem dynamics.
- e. identifying the factors that shape the features of terrestrial and aquatic environments.
- f. analyzing the threats offered by humankind to the world's environments.
- g. assessing the steps necessary to allow sustainability of Earth's life-support systems.

Competency 5: Upon successful completion of this course, the student will demonstrate knowledge of the nature and evolution of behavior in animals by:

- a. listing the genetic and environmental contributions to behavior.
- b. distinguishing between innate and learned behavior.
- c. identifying the types of learning behavior.
- d. discussing the nature of animal cognition.
- e. evaluating the nature and significance of social behavior and sociobiology.