

LAST REVIEW: 2010-2011

NEXT REVIEW: 2015-2016

STATUS: A

COURSE TITLE: Introduction to Biology II Laboratory

COMMON COURSE NUMBER: BSC1011L

CREDIT HOURS: 1

CONTACT HOUR BREAKDOWN

(per 16 week term)

CLOCK HOURS: 3

(Voc. Course ONLY)

Lecture:

Lab: **3**

Clinic:

Other:

PREREQUISITE(S): BSC1010 and BSC1010L with a minimum grade of C

COREQUISITE(S): BSC1011

PRE/COREQUISITE(S):

COURSE DESCRIPTION *(750 characters, maximum):* This course is the second of a two-semester sequence introducing science majors to biological principles including a study of the diversity of organisms, evolution and population dynamics, and ecology. Dissection exercises included. Special fee charged.

General Education Requirements – Associate of Arts Degree (AA), meets Area(s): Area

General Education Requirements – Associate in Science Degree (AS), meets Area(s): Area

General Education Requirements – Associate in Applied Science Degree (AAS), meets Area(s): Area

UNIT TITLES

1. Prokaryotes
2. Protist Diversity
3. Fungi
4. Plant Tissues, Organs, Growth and Reproduction
5. Plant Diversity
6. Taxonomy
7. Animal Diversity
8. Animal Physiology
9. *Evolution and Population Dynamics
10. *Ecological Methods

***Optional**

UNITS

Unit 1 Prokaryotes

General Outcome:

1.0 The student shall: be able to describe prokaryotic cell morphology and characteristics.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 1.1 Identify selected prokaryotic cell types and structures using prepared slides.
- 1.2 Perform experiments to demonstrate the effects of exposure to selected mutagen(s) on prokaryotic cells.
- 1.3 Perform experiment(s) to simulate how infectious diseases spread through a population.
- 1.4 Identify bacteria based on their cell wall structures as it relates to their classification as Gram positive or Gram negative species.

Unit 2 Protist Diversity

General Outcome:

2.0 The student shall: be able to examine and differentiate among various protists.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 2.1 Differentiate among selected animal-like protists based upon their mode of locomotion and other characteristics.
- 2.2 Identify the various stages of the life cycle of a representative fungus-like protist, the slime mold (*Physarum*).
- 2.3 Differentiate among selected plant-like protists based upon their physical characteristics.

Unit 3 Fungi

General Outcome:

3.0 The student shall: be able to describe growth and reproduction in representative Fungi.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 3.1 Examine and describe structure, growth, and reproduction in selected Fungi.
- 3.2 Examine selected lichens and be able to classify them based upon their structure.
- 3.3 Explain the ecological significance of fungi and lichens.

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Unit 4 Plant Tissues, Organs, Growth and Reproduction

General Outcome:

4.0 The student shall: be able to examine and identify selected tissues and organs in selected plants and be able to describe growth and reproduction in selected plant groups.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 4.1 Differentiate monocot and dicot stems and identify their respective tissues.
- 4.2 Examine and identify selected tissues that compose the roots of plants and distinguish between monocot and dicot roots.
- 4.3 Identify selected monocot and dicot leaves and their associated structures.
- 4.4 Perform experiments to demonstrate the mechanisms controlling the stomata.
- 4.5 Examine and describe alternation of generations in a simple plant.
- 4.6 Compare and contrast reproductive structures in various flowers.
- 4.7 Compare and contrast representative seed types and their respective structures.

Unit 5 Plant Diversity

General Outcome:

5.0 The student shall: be able to categorize selected plants into their major taxonomic divisions based upon their structures and adaptations.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 5.1 Recognize selected nonvascular plants (Division Bryophyta), based upon their morphology and life cycles.
- 5.2 Recognize selected seedless vascular plants based upon their morphology and life cycles.
- 5.3 Recognize selected seed plants based upon their morphology and life cycles.

Common Course Number: BSC1011L

Unit 6 Taxonomy

General Outcome:

6.0 The student shall: be able to explain how organisms are classified into major taxa.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 6.1 Distinguish selected specimens from one another based upon relevant morphological features.
- 6.2 Determine the taxon of selected specimens using a dichotomous key.

Unit 7 Animal Diversity

General Outcome:

- 7.0 The student shall:** be able to identify representative organisms from major phyla in the animal kingdom based upon morphological features and physiology.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 7.1 Examine and describe members of the Phyla Porifera and—Cnidaria, including but not limited to selected sponges, hydrozoans, scyphozoans, and anthozoans.
- 7.2 Examine and describe members of the Phyla Platyhelminthes, Rotifera, Nematoda, and Annelida, including but not limited to selected flatworms, rotifers, nematodes, and annelids.
- 7.3 Examine and describe members of the Phylum Mollusca, including but not limited to a typical bivalve and cephalopod.
- 7.4 Examine and describe members of the Phylum Arthropoda, including but not limited to selected chelicerates, crustaceans, and uniramians.
- 7.5 Examine and describe selected members of the Phyla Echinodermata and Chordata.
- 7.6 Detail various patterns of asexual reproduction in selected species.
- 7.7 List and describe various stages of embryonic development in selected invertebrate and vertebrate species.

Unit 8 Animal Physiology

General Outcome:

8.0 The student shall: be able to recognize various physiological mechanisms among selected members of the animal kingdom.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 8.1 Recognize and describe the structural differences between contracted and relaxed skeletal muscle tissue.
- 8.2 Recognize and identify components of vertebrate blood.
- *8.3 Determine the relationship between temperature and metabolic rate in a selected animal.
- 8.4 Determine individual respiratory capacities (lung volumes) using a spirometer.
- *8.5 Determine the effect of insulin on vertebrate physiology.
- *8.6 Explain selected physiological mechanisms in species studied.
- *8.7 Identify selected parts of a vertebrate heart and trace the pathway of blood through the heart.
- *8.8 Observe and identify the parts of a vertebrate brain.
- *8.9 Explain the ciliary-mucoid feeding mechanism in selected invertebrates.

*Optional

Common Course Number: BSC1011L

***Unit 9 Evolution and Population Dynamics**

General Outcome:

9.0 The student shall: be able to examine some of the classical examples used as evidence of evolution and explore several mechanisms through which evolution acts.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- *9.1 Explain how fossils, comparative anatomy, and embryology can be used as evidence of evolution.
 - *9.2 Examine and explain the effect of mutagens as one source of variability in natural populations.
 - *9.3 Simulate the effects of selection pressure on genotypic and phenotypic frequencies in a population.
 - *9.4 Demonstrate techniques of molecular biology to show relatedness among a group of similar mammals.
- *Optional

***Unit 10 Ecological Methods**

General Outcome:

10.0 The student shall: be able to use basic ecological methods to quantify the characteristics of an ecological community.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- *10.1 Determine how a representative organism selects its habitat based upon physical characteristics of the environment.
- *10.2 Practice quadrat sampling techniques and calculate distribution and relative abundance in the study area.
- *10.3 Simulate a population of organisms to demonstrate the methods used in a mark and recapture experiment.
- *10.4 Explain how indices are used to measure species diversity in a sample population.