

SOUTHEAST COMMUNITY COLLEGE
DIVISION OF ARTS AND SCIENCES
Sciences
Revision Date: 07-01-19

I. CATALOG DESCRIPTION

Course Number: BIOS1410
Course Title: Biology II
Prerequisite(s): None
Catalog Description: This course investigates life and living systems at the organismic, population, community, and ecosystem levels. Discussion topics include evolution, the classification of living things, form and function of all groups of eukaryotic organisms, intra- and interspecific interactions, ecology and conservation biology. This course in series with BIOS1400 is designed to provide students with a foundation for upper level courses in the biological and life sciences. A laboratory course (BIOS1410L) must be taken concurrently.

Credit Hours: 4.0
Class Hours: 45
Lab Hours: 30
Total Contact Hours: 75

II. COURSE OBJECTIVES: *Course will:*

- A. Recognize science and scientific inquiry as a vital and relevant component of human society
- B. Explain how science and scientific theory provide logical explanations for natural phenomena based on the acquisition and analysis of evidence.
- C. Describe how evolution and natural selection are responsible for both the unity and diversity of all life on earth.
- D. Provide a comprehensive survey of all life at the organismic, population, community, and ecosystem levels.
- E. Present a comparative survey of plant and animal form and function.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES

- A. Student Learning Outcomes: *Student will be able to:*
- 1. Explain similarities and differences between living forms in all three Domains of life.
 - 2. Explain the basic functions of multicellular systems in the Domain Eukarya.
 - 3. Understand micro- and macroevolutionary processes.
 - 4. Describe the basics of phylogenetic analysis.
 - 5. Generate and interpret phylogenetic trees.
 - 6. Explain the origin of life and the scope of past and present biological diversity.
 - 7. Describe the flow of energy through cells, organisms, populations, natural communities, and ecosystems.
 - 8. Describe cycling of nutrients and other materials vital to life from the cellular through the ecosystem level.
 - 9. Understand homeostasis and describe examples of negative and positive feedback mechanisms from the cellular through the ecosystem level.
 - 10. Understand the connection between biological systems and the biosphere.
 - 11. Understand the process of gathering data, data analysis, and data presentation via statistical analysis, graphing, and the preparation of detailed laboratory reports summarizing experimental methods and results.

12. Understand the connection between cellular, organismal, and ecosystem function.
- B. General Education Learning Outcomes**
1. GELO #3: Critical Thinking & Problem Solving
 - Outcome: Collect, identify, interpret and analyze data.
 - Outcome: Synthesize information to arrive at reasoned solutions to problems.
 - Outcome: Evaluate ideas presented in writing, media, speech, or artistic presentations.
 - Outcome: Evaluate the validity of arguments, alternatives, data, outcomes, and/or impacts of actions.
 - Outcome: Acquire and integrate knowledge and construct relationships across disciplines.
 2. GELO #5: Analytical, Quantitative, and Scientific Reasoning
 - Outcome: Apply mathematical and scientific methods to solve problems from an array of contexts and everyday situations.
 - Outcome: Understand and create logical arguments supported by quantitative and scientific evidence and communicate those arguments in a variety of formats.
 - Outcome: Effectively develop strategies, algorithms, or experiments (or performing experiments) to better describe the systems or to solve the problems.
 - Outcome: Manipulate formulas, data sets, graphs, tables, etc. in a way to produce a meaningful outcome.
 3. GELO #6: Career and Life Skills
 - Outcome: Use digital technology effectively to access, manage, integrate, evaluate, and present information.

IV. CONTENT/TOPICAL OUTLINE (*course outline may provide more detailed information*)

- A. Evolution and Natural Selection
- B. Phylogenetic Analysis
- C. Microevolution
- D. Speciation and Macroevolution
- E. Prokaryotic Origins and Diversity
- F. Origins of Eukaryotic Life
- G. Fungal Diversity
- H. Plant Diversity
- I. The Radiation of Animal Life
- J. Plant Form and Function
- K. Animal Form and Function

V. INSTRUCTIONAL MATERIALS

- A. Required Text(s):
 1. Urry et al. *Campbell Biology in Focus Plus MasteringBiology*. Pearson, 2nd ed. 2016. ISBN 13: 9780321962584.
- B. Other Resources:
 1. *Mastering Biology* Online Study Program, Pearson Publishing
 2. Laboratory Exercise Handouts
 3. Laboratory Notebook

VI. METHODS OF PRESENTATION/INSTRUCTION

- A. Methods of presentation typically include a combination of the following:
 1. Lecture: PowerPoint lectures, discussions, and short supporting videos.
 2. Laboratory: Experiments, hands-on data collection and evaluation, demonstrations, occasional videos.

VII. METHODS OF EVALUATION

- A.** Methods of evaluation typically include a combination of the following:
- 1.** Exams
 - 2.** Quizzes – via Mastering Biology as well as regular laboratory quizzes
 - 3.** Homework assignments via Mastering Biology
 - 4.** Laboratory reports
- B.** SCC STANDARD GRADING SCALE POLICY:
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|----|--------|----|-------|---|------------|
| A+ | 95-100 | C+ | 75-79 | F | 59 or less |
| A | 90-94 | C | 70-74 | | |
| B+ | 85-89 | D+ | 65-69 | | |
| B | 80-84 | D | 60-64 | | |

VIII. SPECIFIC COURSE REQUIREMENTS

- A.** None