



## BIOL 110 - Survey of Biology Course Outline

Approval Date: 04/23/2020

Effective Date: 06/08/2020

### SECTION A

**Unique ID Number** CCC000321949

**Discipline(s)** Biological Sciences

**Division** Science and Engineering

**Subject Area** Biology

**Subject Code** BIOL

**Course Number** 110

**Course Title** Survey of Biology

**TOP Code/SAM Code** 0401.00 - Biology, General / E - Non-Occupational

**Rationale for adding this course to the curriculum** Update textbook, add minimum qualifications to Discipline, add degree/transfer applicability, lab content

**Units** 4

**Cross List** N/A

**Typical Course Weeks** 18

**Total Instructional Hours**

#### Contact Hours

**Lecture** 54.00

**Lab** 54.00

**Activity** 0.00

**Work Experience** 0.00

**Outside of Class Hours** 108.00

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**Total Contact Hours** 108

**Total Student Hours** 216

**Open Entry/Open Exit** No

**Maximum Enrollment**

**Grading Option** Letter Grade or P/NP

**Distance Education Mode of Instruction** On-Campus

### SECTION B

**General Education Information:**

### SECTION C

**Course Description**

**Repeatability** May be repeated 0 times

**Catalog Description** A study of life, including surveys of plant and animal kingdoms, mammalian anatomy and physiology, cytology, genetics, and ecology. Intended for non-biology majors.

**Schedule Description**

## SECTION D

### Condition on Enrollment

- 1a. **Prerequisite(s):** *None*
- 1b. **Corequisite(s):** *None*
- 1c. **Recommended:** *None*
- 1d. **Limitation on Enrollment:** *None*

## SECTION E

### Course Outline Information

#### 1. Student Learning Outcomes:

- A. Understand the terminology commonly used in the biological sciences.
- B. Evaluate the differences between prokaryotic and eukaryotic cells.
- C. Describe the structure of eukaryotic cells and relate cellular structure to functions.

#### 2. Course Objectives: Upon completion of this course, the student will be able to:

- A. Develop an appreciation for the complexities of life. Describe and analyze the characteristics common to all life forms and the differences used for taxonomic classification. Compare the Kingdoms of life and within each Kingdom identify traits used to separate taxa.
- B. Explain levels of organization within living systems including evaluating prokaryotic and eukaryotic cellular differences and similarities; tissues; organs; and systems.
- C. Understand complexities of biological macromolecules and the contribution of each to metabolism.
- D. Be able to solve Mendelian genetics problems and relate genetics to protein synthesis and recombinant DNA technology.
- E. Recognize stages of mitosis and meiosis and evaluate the role of cell division in different organisms' life cycles.
- F. Apply basic principles of ecology in energy flow and nutrient recycling to metabolism of life.
- G. Understand and evaluate the role of natural selection giving examples of primitive to advanced characteristics in plants and animals.
- H. Examine the relationship between structure and function in both plant and animal organs.
- I. Demonstrate manipulative skill in use of both compound and dissecting microscopes in recognizing organelles, cells, tissues, organs, and organisms. Demonstrate familiarity with plant and animal macroscopic tissues and organs.
- J. Understand the scientific method to be able to evaluate information obtained and make informed choices of application.
- K.

#### 3. Course Content

Lecture:

- A. Characteristics of life
  - a. Living organisms
  - b. Virus and prion

- B. Chemistry life
  - a. Elements, bonds, inorganic molecules
  - b. Macromolecules of life
    - a. Carbohydrates
    - b. Lipids
    - c. Proteins
    - d. Nucleic Acids
- C. Levels of biological organization
- D. Cell structure and function
  - a. Organelle structure and physiology
  - b. Membrane permeability
  - c. Metabolism of photosynthesis and cell respiration
- E. Cell division
  - a. Mitosis
  - b. Meiosis
- F. Genetics and protein synthesis
- G. Diversity of life
  - a. Domain Bacteria, Archaea, Eukarya
  - b. Protists
  - c. Fungi
  - d. Plants
  - e. Animals
- H. Plant Anatomy and Physiology
  - a. Flower
  - b. Leaf
  - c. Stem
  - d. Root
- I. Animal Anatomy and Physiology
  - a. Digestion
  - b. Respiration
  - c. Circulation
  - d. Urinary
  - e. Reproductive
  - f. Endocrine and Nervous

**4. Methods of Instruction:**

**Experiments:**

**Lab:**

**Lecture:** Lecture covering topics in course content with images

**5. Methods of Evaluation:** Describe the general types of evaluations for this course and provide at least two, specific examples.

**Typical classroom assessment techniques**

Exams/Tests --

Quizzes --

Home Work --

Additional assessment information:

1. Examinations - Lecture examinations will consist of objective questions in a variety of formats including short answer, multiple choice, and essay questions. Lab examinations involve identifying organisms and biological structures and demonstrating knowledge of basic laboratory methods.
2. Lab Notebook - Students will keep an organized lab notebook of their observations of the exercises performed in the laboratory. The lab notebook will be evaluated by the laboratory instructor at the end of the course.
3. Quizzes - Quizzes are short examinations covering both lecture material and current laboratory exercises.
4. Homework assignments - These assignments include solving Mendelian genetic calculations and a biological chemistry problem set.

Letter Grade or P/NP

**6. Assignments:** State the general types of assignments for this course under the following categories and provide at least two specific examples for each section.

A. Reading Assignments

Selected readings from the required textbook and laboratory manual.

For example:

1. Read chapter 1 from "Biology - A Guide to the Natural World" covering the scientific method.
2. Read exercise 1 in the laboratory manual and summarize the procedures to be performed in lab.

B. Writing Assignments

Writing assignments that are graded on scientific accuracy, organization, and correct use of English grammar and spelling.

For example:

1. Genetics problem set
2. Chemistry problem set

C. Other Assignments

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**7. Required Materials**

**A. EXAMPLES of typical college-level textbooks (for degree-applicable courses) or other print materials.**

Book #1:

Author: Krogh

Title: Biology: A Guide to the Natural World Technology Update

Publisher: Pearson Prentice Hall

Date of Publication: 2013

Edition: 5th

Book #2:

Author: Simon, E.  
Title: Biology The Core  
Publisher: Pearson Prentice Hall  
Date of Publication: 2020  
Edition: 3rd

**B. Other required materials/supplies.**