

University of Arkansas – Fort Smith
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General Syllabus

BIOL 20083 Introduction to Cell Biology

Credit Hours: 3

Lecture Hours: 3

Laboratory Hours: 0

Prerequisite or corequisite: CHEM 14103 College Chemistry I

Effective Catalog: 2018- 2019

I. Course Information

A. Catalog Description

Study of the general principles of biology. The focus is on natural laws, the maintenance of living systems, and evolutionary concepts central to biology. Topics include cellular structure and function, genetics, evolution, and molecular and cellular biology. Course intended for science majors.

B. Additional Information - None

II. Student Learning Outcomes

A. Subject Matter

Upon successful completion of this course, the student will be able to:

1. Discuss the influences of biological science on societal structures and attitudes.
2. Describe the science of genetics utilizing classical and molecular terms, theories, and practices.
3. Explain the theories of the origin of life and the evidence that supports evolution theory.
4. Describe, in molecular terms, the major biological pathways involved in energy acquisition and utilization.
5. Describe the structures of the prokaryotic and eukaryotic cells and explain the function of the structures in cellular maintenance and metabolism.

B. University Learning Outcomes

This course enhances student abilities in the following areas:

Analytical Skills

Quantitative Reasoning: Students will test hypotheses in the application of scientific method. Students will perform computations appropriate to the discipline such as interpreting information from graphs and construct graphs appropriate to data or equations.

Communication Skills (written and oral)

In reading and listening, the student will determine the meaning of words on the basis of context, identify facts as opposed to opinion, and perceive the tone and bias of a message. Students will effectively communicate scientific ideas and principles.

Ethics

The students will conduct themselves in an ethical manner and evaluate ethical considerations during discussions of ecosystem modifications induced by human activities.

III. Major Course Topics

- A. Introduction to Biology
 - 1. The Science of Biology
 - 2. Chemistry for Biology Majors
 - a. Nature of Molecules and Properties of Water
 - b. Chemical Building Blocks
- B. Biology of the Cell
 - 1. Cell Structure
 - 2. Membranes
 - 3. Cell Division
- C. Cell Communication and Signaling
 - 1. Basics of Cell signaling
- D. Cellular Energetics
 - 1. Photosynthesis
 - 2. Cellular Respiration
- E. Classical and Molecular Genetics
 - 1. Sexual Reproduction and Meiosis
 - 2. Patterns of Inheritance
 - 3. DNA Structure and function
 - 4. Gene structure and function