Administrative Unit: Science

Course Prefix and Number: BIOL 110

Course Title: Principles of Biology I

Number of Credit Hours: 3 Lecture Hours: 3 Laboratory Hours: 0

Catalog Description: Fundamental process underlying biological systems from a cellular and organismal viewpoint. Students majoring in Biology must earn a grade C or better. G.E.

Prerequisite(s)/Corequisite(s): None.

Text(s): Textbooks listed are not necessarily the textbook(s) used in the course.

Most current edition of the following:

Campbell, N. & Reese, J. Essential Biology. Benjamin Cummings.


Course Objectives:

• To examine the characteristics common to all life forms.
• To relate basic chemical concepts to cellular structure and function.
• To describe fundamental energy transformations in living systems.
• To investigate and describe the basic principles and mechanisms of inheritance.

Measurable Learning Outcomes

• Identify some of the roles science plays in everyday life.
• Outline the scientific method and explain the characteristics of a scientific theory.
• Define the characteristics of a living organism.
• Identify and discuss the chief unifying principles of biology.
• List the basic atoms and molecules important to life and define their specific characteristics.
• Distinguish between different cell types and identify cell structures and their functions.
• Summarize the major energy transformations that take place in plant and animal cells.
• Describe the processes of cell division.
• Demonstrate how genes and chromosomes carry and convey genetic information.
• Explain how sexual reproduction contributes to genetic diversity.
• Enumerate Mendelian principles and demonstrate basic genetic crosses.
• Illustrate how genetic abnormalities occur.
• Model DNA structure and replication.
• Summarize the events of genetic transcription and translation and identify the cellular structures involved.
• Define biotechnology and list examples.

Topical Outline (major areas of coverage):

• Basic principles of chemistry as they apply to living systems.
• Cellular structure and function.
• Regulation of cellular function.
• Cell division and principles of inheritance.
• Respiration and photosynthesis.
• Protein synthesis.

Material from this course may be tested on the Major Field Test (MFT) administered during the Culminating Experience course for the degree.

Recommended maximum class size for this course: 35

Library Resources: Online databases are available at http://www.ccis.edu/offices/library/resources.asp. You may access them from off-campus using your eServices login and password when prompted.

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Date: April 21, 2005

NOTE: The intention of the master syllabus is to provide an outline of the contents of this course, as specified by the faculty of Columbia College, regardless of who teaches the course, when it is taught or where it is taught. Faculty members teaching this course for Columbia College are expected to facilitate learning pursuant to the course objectives and cover the subjects listed in the topical outline. However, instructors are also encouraged to cover additional topics of interest so long as those topics are relevant to the course’s subject. The master syllabus is, therefore, prescriptive in nature but also allows for a diversity of individual approaches to course material.

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