



MASTER COURSE OUTLINE

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Date: April 2021

COURSE TITLE

General Biology with Lab

GENERAL COURSE INFORMATION

Dept.: BIOL&

Course Num: 160

(Formerly:)

CIP Code: 26.0101

Intent Code: 11

Program Code: N/A

Credits: 5

Total Contact Hrs Per Qtr.: 71.5

Lecture Hrs: 38.5

Lab Hrs: 33

Other Hrs: 0

Distribution Designation: Lab Science LS

COURSE DESCRIPTION (as it will appear in the catalog)

This course is intended for students pursuing careers in Nursing or other Allied Health fields and satisfies the biology prerequisite for A&P 1 (BIOL& 241). Course content includes the following topics: 1) cellular order and organization including cell chemistry, biological molecules, and cell structure and physiology; 2) energetics including enzymes and carbohydrate metabolism; 3) reproduction, growth and development including DNA replication, cell cycle and control, and cell division; 4) cellular regulation including membranes, transport, protein synthesis, gene regulation, cell signaling, and buffer systems. This course does not satisfy the prerequisite for BIOL& 222 or 223. Related investigations take place in a three-hour lab period each week.

PREREQUISITES

A 2.0 or better in CHEM& 121 or CHEM& 161 on a college transcript within the last 3 years, or concurrent enrollment in CHEM& 121 or instructor permission. Prior introductory biology experience such as high school biology or BIOL&100 recommended.

TEXTBOOK GUIDELINES

A recent edition of a biology text, the text used must have departmental approval.

COURSE LEARNING OUTCOMES

Upon successful completion of the course, students should be able to demonstrate the following knowledge or skills:

1. List and discuss the characteristics of life and levels of organization.
2. Explain the three types of bonding.
3. Name and describe the structure, functions, and characteristics of the major macromolecules found in living organisms; apply that knowledge to the cell processes below.
4. Compare and contrast the structures of prokaryotic and eukaryotic cells; state the structure and function of all cell structures and organelles.
5. Explain how organisms process energy within cells, including the ATP/ADP cycle, enzyme function, and carbohydrate metabolism using the step-by-step events of cellular respiration.
6. Explain the reproduction, growth and development of living organisms through heredity of DNA; including details of DNA replication, cell cycle and control, and events of mitosis and meiosis.

7. Describe how cells perform regulation, maintain homeostasis, and respond to stimuli including:
 - a. membranes and the various mechanisms for transport,
 - b. details of protein synthesis,
 - c. gene regulation and cell signaling, and
 - d. buffer systems.
8. Apply content knowledge of previous learning outcomes during lab exercises.

INSTITUTIONAL OUTCOMES

IO3 Human Relations/Workplace Skills: Students will be able to demonstrate teamwork, ethics, appropriate safety awareness and/or workplace specific skills.

COURSE CONTENT OUTLINE

1. Cellular Order and Organization
 - Characteristics of Life and the Levels of Biological Organization
 - Atoms, Bonding, and Molecules
 - Macromolecules: Basics of the Four Classes (Carbohydrates, Lipids, Proteins, and Nucleic Acids):
 - Details of each macromolecule will be taught and applied in related processes below.
 - Monomers and Polymers
 - Cell Types, Structures and Functions of Cell Structures and Organelles
2. Processing Energy
 - Photosynthesis: very brief
 - Energy and Enzymes
 - Carbohydrate Metabolism using Cellular Respiration: Details about Carbohydrates
3. Reproduction, Growth and Development Through Heredity of DNA
 - DNA Replication: Details about DNA
 - Cell Cycle and its Control, Mitosis and Meiosis
4. Regulation, Maintain Homeostasis, and Respond to Stimuli in Changing Environments
 - Membranes, Their Components, and Mechanisms of Transport: Details about Lipids
 - Protein Synthesis (Gene Expression at the Molecular Level): Details about RNA and Proteins
 - Gene Regulation (lac Operon) and Cell Signaling (Activation, Transduction, and Response)
 - Buffer Systems

DEPARTMENTAL GUIDELINES *(optional)*

- The overall course percentage will be based on the following weighted categories:
 - Lecture exams (including 2-4 tests plus a comprehensive final exam) collectively worth 65-70%,
 - Laboratory work (including lab reports, quizzes, and lab exams) collectively worth 20-25%, and
 - Class assignments (including quizzes, homework, and in-class activities) collectively worth up to 15% of the overall score.
- A standard grade scale will be used for this course with a 2.0 grade point corresponding to 70-72%.
- All exams are proctored. When possible, exams are held on campus. Online and hybrid courses may have exams online, they may or may not be proctored.
- Lab is an essential part of this class and is required for credit. Students missing more than two labs will not be given credit for this course.
- Students repeating BIOL& 160 more than once must have instructor permission to repeat the course.
- PO5 should be assessed: Students will be able to solve problems by gathering, interpreting, combining and/or applying information from multiple sources.


DIVISION CHAIR APPROVAL

3/21/21
DATE