

Effective Implementation date: Summer 2018, 201910

Required Syllabus Information – all must be included in the course syllabus

BIO 111

Course Title: General College Biology I with Lab:GT-SC1

Course Credits: 5

Course Description: Examines the fundamental molecular, cellular and genetic principles characterizing plants and animals. Includes cell structure and function, and the metabolic processes of respiration, and photosynthesis, as well as cell reproduction and basic concepts of heredity. The course includes laboratory experience.

GT Pathways Requirements:

Guaranteed Transfer (GT) Pathways Course Statement:

Guaranteed Transfer (GT) Pathways Course Statement: The Colorado Commission on Higher Education has approved BIO 111 for inclusion in the Guaranteed Transfer (GT) Pathways program in the GT- SC1 category. For transferring students, successful completion with a minimum C– grade guarantees transfer and application of credit in this GT Pathways category. For more information on the GT Pathways program, go to [CDHE GT Pathways Information](#).

NATURAL & PHYSICAL SCIENCES (N&PS) CONTENT CRITERIA – GT-SC1

1. The lecture content of a GT Pathways science course (GT-SC1)
 - a. Develop foundational knowledge in specific field(s) of science.
 - b. Develop an understanding of the nature and process of science.
 - c. Demonstrate the ability to use scientific methodologies.
 - d. Examine quantitative approaches to study natural phenomena.
2. The laboratory (either a combined lecture and laboratory, or a separate laboratory tied to a science lecture course) content of a GT Pathways science course (GT-SC1)
 - a. Perform hands-on activities with demonstration and simulation components playing a secondary role.
 - b. Engage in inquiry-based activities.
 - c. Demonstrate the ability to use the scientific method.
 - d. Obtain and interpret data, and communicate the results of inquiry.
 - e. Demonstrate proper technique and safe practices.

COMPETENCIES & STUDENT LEARNING OUTCOMES FOR GT-SC1

Inquiry & Analysis:

4. **Select or Develop a Design Process**
 - a. Select or develop elements of the methodology or theoretical framework to solve problems in a given discipline.
5. **Analyze and Interpret Evidence**

- a. Examine evidence to identify patterns, differences, similarities, limitations, and/or implications related to the focus.
 - b. Utilize multiple representations to interpret the data.
- 6. Draw Conclusions**
- a. State a conclusion based on findings.

Quantitative Literacy:

1. Interpret Information
 - a. Explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words).
2. Represent Information
 - a. Convert information into and between various mathematical forms (e.g., equations, graphs, diagrams, tables, words).

SYSTEM REQUIREMENTS:

REQUIRED COURSE LEARNING OUTCOMES

1. Define and utilize terminology, specific facts, experimental methodologies, and general concepts related to basic chemistry, cell structure and function, cell reproduction, bio-energetics and genetics.
2. Apply the concepts learned to interpret and analyze new situations.
3. Perform proper procedures and techniques in the laboratory and utilize equipment safely.
4. Describe the impact of biological research and technology on society.
5. Employ scientific methodologies to develop predictions, interpret experimental data, and form conclusions.
6. Communicate scientific information clearly and logically.
7. Represent and interpret biological graphs, tables and other quantitative information.

REQUIRED TOPICAL OUTLINE

The required topical outline information **MUST** be included in the syllabi. It may be incorporated using one of the following variations: copying the topical outline as written below, integrating the topics within the assignment schedule, or listing the topics to be covered.

- I. Introduction
 - a. Nature of the scientific process
 - b. Unifying principles of life
- II. Fundamentals of chemistry
 - a. Atoms, molecules and bonding
 - b. Biologically important molecules
 - c. Water and pH
- III. Cell structure and function
 - a. Prokaryotic and eukaryotic
 - b. Microscopy
 - c. Organelles and cell structure
 - d. Membrane structure and function

- e. Transport mechanisms
- IV. Cell reproduction
 - a. DNA replication
 - b. Mitosis
 - c. Meiosis
- V. Bio-energetics
 - a. Laws of thermodynamics
 - b. Aerobic respiration and fermentation
 - c. Photosynthesis
- VI. Genetics
 - a. Mendelian and non-mendelian genetics
 - b. Gene expression
 - c. Biotechnology

Syllabi requirements, including legal compliance information must be included. Individual College syllabi guidelines may include additional information. Please contact your VPI/CAO for specific College requirements.