



# Alabama Community College System

## BIO 220 General Microbiology

### I. BIO 220 General Microbiology – 4 Semester Hours

### II. Course Description

This course covers the fundamental principles of microbiology, which includes the characteristics of bacteria, archaea, eukaryotes, and viruses; cell functions; chemical and physical control methods of microbial growth; and interactions between microbes and humans in relation to pathology, immunology, and the role of normal biota. The laboratory experience focuses on microbiological techniques including culturing, microscopy, staining, identification, and control of microorganisms. Two 120-minute laboratories are required.

### III. Prerequisite

BIO 103 (RECOMMENDED: 4 Semester Hours of Chemistry).

### IV. Textbook

Due to the varied selection of quality college-level textbooks, each college will select the textbook needed to meet the requirements of this course.

### V. Course Learning Outcomes

By the end of the course, students will be able to:

1. differentiate between microbial characteristics using appropriate terminology as related to bacteria, archaea, eukaryotes, and viruses;
2. describe microbial cellular functions in the areas of energy, growth, and genetics;
3. describe chemical and physical control methods of microbial growth both internal and external to the human body;
4. explain the beneficial and harmful interactions between microbes and humans in relation to pathology, immunology, and the role of normal biota of various body systems;
5. demonstrate proper lab safety and aseptic technique in the performance of common microbiological techniques to include culturing, microscopy, staining, identification, and control of microorganisms; and
6. apply scientific reasoning to interpret data generated through common microbiological techniques.

## **VI. Course Outline of Topics**

### Lecture:

1. Microscopy
2. Cell structure and function of bacteria, archaea, and eukaryotes
3. Viruses and other acellular infectious agents
4. Microbial metabolism
5. Microbial growth and nutrition
6. Microbial genetics
7. Biotechnology
8. Physical and chemical control of microbes
9. Pathogenesis
10. Normal biota
11. Immunology
12. Infections and diseases of human body systems

### Lab:

1. Lab safety
2. Aseptic technique
3. Microscopy
4. Survey of microorganisms
5. Microbial staining techniques
6. Microbial sampling and culture techniques
7. Evaluation of microbial control techniques
8. Biochemical testing
9. Microbial identification

## **VII. Evaluation and Assessment**

Grades will be given based upon A = 90 – 100%, B = 80 – 89%, C = 70 – 79%, D = 60 – 69%, and F = below 60%.

## **VIII. Attendance**

Students are expected to attend all classes for which they are registered. Students who are unable to attend class regularly, regardless of the reason or circumstance, should withdraw from that class before poor attendance interferes with the student's ability to achieve the objectives required in the course. Withdrawal from class can affect eligibility for federal financial aid.

**IX. Statement on Discrimination/Harassment**

It is the official policy of the Alabama Community College System and entities under its control, including all Colleges, that no person shall be discriminated against on the basis of any impermissible criterion or characteristic, including, without limitation, race, color, national origin, religion, marital status, disability, sex, age, or any other protected class as defined by federal and state law. (ACCS Policies 601.02 and 800.00)

**X. Americans with Disabilities**

*The Rehabilitation Act of 1973 (Section 504) and the Americans with Disabilities Act of 1990 state that qualified students with disabilities who meet the essential functions and academic requirements are entitled to reasonable accommodations. It is the student's responsibility to provide appropriate disability documentation to the College.*