

SOUTHEAST COMMUNITY COLLEGE
CONSTRUCTION, MANUFACTURING AND TECHNOLOGY DIVISION
Energy Generation Operations Technology Program
Revision Date: August 22, 2022

I. CATALOG DESCRIPTION

Course Number: ENER2520
Course Title: Industrial Microbiology
Prerequisite(s): None
Catalog Description: Introduces students to structure, classification and ecology of microorganisms, especially as it relates to a biofuels processing plant and other industrial processes. Will include experience in microbiological laboratory practices and techniques, basic microbial metabolism as well as study of the enzymes supporting industrial microbiology facilities.
Credit Hours: 2
Class Hours: 23
Lab Hours: 23
Total Contact Hours: 46

II. COURSE OBJECTIVES: *Course will:*

- A. Demonstrate the various types of microorganisms and their importance to humans.
- B. Demonstrate industrial uses of microorganisms such as yeast.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

- A. Student Learning Outcomes: *Student will be able to:*
 - 1. Demonstrate a basic understanding of the following:
 - a. Microbial growth and reproduction
 - b. Taxonomy
 - c. Prokaryotic and eukaryotic cell structure and function
 - d. Microbial metabolism
 - 2. Demonstrate competence in a Microbiology laboratory setting
- B. General Education Learning Outcomes (GELOs)
 - 1. GELO #3: Critical Thinking & Problem Solving
Outcomes 1: Collect, identify, interpret and analyze data.

IV. CONTENT/TOPICAL OUTLINE

- A. Introduction /Impact of microorganisms
- B. Types of microorganisms
- C. Taxonomy
- D. Prokaryotic and eukaryotic cell structure and function
- E. Microbial growth
- F. Microbial reproduction
- G. Microbial metabolism
- H. Microbial genetics and biotechnology
- I. Characteristics of the groups of microorganisms
- J. Role of enzymes in industrial microbiology

V. INSTRUCTIONAL MATERIALS

- A. Required Text(s): None
- B. Other Resources: Various instructor-provided resources

VI. METHODS OF PRESENTATION/INSTRUCTION

- A.** Methods of presentation typically include a combination of the following:
 - 1.** On-line or face-to-face lecture
 - 2.** On-line homework and quizzes
 - 3.** In-class group activities/problem solving exercises
 - 4.** Laboratory exercises

VII. METHODS OF EVALUATION

- A.** Methods of evaluation, although determined by the individual instructor, traditionally includes a combination of the following:
 - 1.** Class participation
 - 2.** Regular assignments
 - 3.** Written exams and/or quizzes
 - 4.** Performance and observational assessments

VIII. SPECIFIC COURSE REQUIREMENTS

- A.** A minimum grade of “C” or 70% is required to receive credit for this course.
- B.** Cheating within the Manufacturing Division: Any violation of academic integrity on assignments, quizzes, or tests will result in a grade of 0 on that assignment, quiz, or test. A second violation in any course after the initial infraction will result in a grade of F for that course. Any additional violations while in the program will result in a suspension from the program. For additional information, refer to the *Academic Integrity* pamphlet available from Student Services.
- C.** Credit by Examination: Credit for the course CANNOT be earned through Credit by Examination.