SYLLABUS
PART I
EDISON STATE COMMUNITY COLLEGE
BIO 242S MICROBIOLOGY WITH LABORATORY
3 CREDIT HOURS

COURSE DESCRIPTION

Introduction to microbiology with an emphasis on medically related phenomena. Includes a general survey of microorganisms, host-microbe relationships, and principles of immunity. Students perform laboratory techniques to identify microorganisms, explore the ubiquitous nature of microbes, and learn the methodology and clinical relevance of proper procedures. Prerequisite: CHM 111S, BIO 121S, BIO 124S, BIO 125S, or BIO 126S. Lab fee.

COURSE GOALS

The student will:

Bloom's Level		Gen Ed Outcomes
2	1. Summarize historical and recent perspectives, methods, and discoveries of microbiology.	1, 2, 4, 5, 6
2	2. Describe the ubiquitous, diverse nature of microorganisms and their interrelationships with humans and other higher organisms.	2, 4, 5, 6
4	3. Analyze the differences in the prokaryotic and eukaryotic cells as they apply to clinical diagnostics, antimicrobial therapy, and antibiotic resistance.	1, 2, 3, 4, 5, 6
5	4. Summarize the microorganisms of medical importance and describe the role of opportunistic pathogens in health care.	1, 2, 5, 6
5	5. Assess the interactions between microbes and host diseases, epidemiology, and mechanisms of pathogenicity.	2, 3, 4, 5, 6
2	6. Describe a basic understanding of immunology as it relates to nonspecific and specific body defenses, including applications of immunology.	2, 5, 6
3	7. Discover the ubiquitous nature of microorganisms.	2, 5, 6
2	8. Perform several staining techniques including the simple stain, negative stain, as well as differential stains e.g. (the Gram stain, spore stain, and acid-fast stain).	2, 5, 6
3	9. Master aseptic techniques.	1, 2, 5, 6
1	10. Identify pure culture techniques for isolating bacteria.	2, 5, 6
5	11. Test the metabolic end-products of microorganisms as means of identification.	2, 5, 6
2	12. Complete experiments utilizing different physiological characteristics of bacteria.	2, 3, 5, 6
5	13. Test the effects of antiseptics and disinfectants on microbial growth.	1, 2, 3, 4, 5, 6
5	14. Test and measure the effects of antibiotics on various bacteria.	1, 2, 3, 4, 5, 6
4	15. Analyze the influence of temperature, pH, or UV light on bacterial growth.	2, 3, 5, 6
5	16. Assess the effects of hand washing on a synthetic epidemic.	1, 2, 3, 4, 5, 6
4	17. Analyze susceptibility to dental caries.	2, 5, 6
2	18. Describe what is involved in bacterial population counts in the food, water, and milk industries.	1, 2, 3, 4, 5, 6

CORE VALUES

The Core Values are a set of principles that guide in creating educational programs and environments at Edison State. They include communication, ethics, critical thinking, human diversity, inquiry/respect for learning, and interpersonal skills/teamwork. The goals, objectives, and activities in this course will introduce/reinforce these Core Values whenever appropriate.

TOPIC OUTLINE

1. Scope and History of Microbiology
2. Importance and Limitations of Microscopy
3. Comparison of Prokaryotic and Eukaryotic Cell Structure and Function
4. Bacterial Classification
5. Viruses and Viral Production
6. Culture of DNA and RNA Viruses
7. Diseases Caused by DNA and RNA Viruses
8. Microbial Nutrition, Ecology and Growth
9. Anatomy of an Infection and Epidemiology
10. Immunity and the Systems Involved in Immune Defenses
11. Nonspecific and Specific Immune Reactions
12. Practical Applications of Immunological Function
13. Medically Significant Groups of Bacteria and Their Identification
14. Lab Safety and Microscopy
15. Pure Culture and Aseptic Techniques
16. Preparation and Types of Media
17. Smear Preparation and Staining Methods
18. Gram Staining and Its Importance
19. Special Staining
20. Identification Using Physiological Characteristics
21. The Enterotube II and Other, Newer Methods
22. Control of Bacterial Growth, Mechanically and Medically
23. The Snyder Caries Susceptibility Test
24. Effectiveness of Hand Scrubbing
25. Bacterial Population Counts in Food
26. Non-Bacterial Pathogens of Man