

El Paso Community College

Syllabus

Part II

Official Course Description

SUBJECT AREA	<u>Biology</u>
COURSE RUBRIC AND NUMBER	<u>BIOL 2420</u>
COURSE TITLE	<u>Microbiology for Non-Science Majors (Lecture + Lab) (F)</u>
COURSE CREDIT HOURS	<u>4 3 3</u> Credits Lec Lab

I. Catalog Description

This course covers basic microbiology and immunology and is primarily directed at pre-nursing, pre-allied health, and non-science majors. It provides an introduction to historical concepts of the nature of microorganisms, microbial diversity, the importance of microorganisms and acellular agents in the biosphere, and their roles in human and animal diseases. Major topics include bacterial structure as well as growth, physiology, genetics, and biochemistry of microorganisms. Emphasis is on medical microbiology, infectious diseases, and public health. Course includes laboratory activities. **Prerequisites: BIOL 1306 and 1106 with a “C” or better or Biology CLEP exam. (3:3). Lab fee.**

II. Course Objectives

LECTURE

Upon satisfactory completion of this course, the student will be able to:

- A. Identify the importance of Microbiology in the development of modern Medicine and Public Health practices.
- B. Describe the historical perspectives important in the development of Microbiology including the germ theory of disease and the disproval of the doctrine of abiogenesis.
- C. Discuss the key steps of aerobic and anaerobic microbial metabolism emphasizing the application of these concepts in the identification of microorganisms in the laboratory.
- D. Discuss the basic concepts of microbial genetics and the applications of recombinant DNA technology.
- E. Discuss the regulation of gene expression in bacteria using the operon model and the impact of DNA transfer processes in the development of antibiotic resistant strains.
- F. Describe the characteristics of microbial growth and its applications in the control of microbial populations using the most commonly used physical and chemical agents.
- G. Discuss the use of the different types of culture media and culture techniques used for the isolation of clinically important pathogens.
- H. Describe the systematic approach followed in the identification of the most common bacterial pathogens through routinely used biochemical testing, multi-test systems and automated testing.
- I. Review the main groups of bacterial, fungal and parasitic pathogens, the infectious diseases and other conditions associated with them.
- J. Describe the methodology used in the diagnosis of fungal and parasitic infections, as well as the methods and techniques for isolating or identifying the fungi and parasites of clinical significance.

- K. Identify the unique characteristics of viruses and prions and identify the major families that include human pathogens.
- L. Develop and use critical thinking and problem solving skills through the use of case studies in the diagnosis and management of infectious diseases.
- M. Discuss the mechanisms of microbial pathogenicity and the principles of Epidemiology.
- N. Describe the manner in which nonspecific and specific host defense mechanisms are involved in fighting pathogens and protecting the host from infectious diseases.
- O. Apply the principles of immunology to the diagnosis, prevention and treatment of infectious and immune diseases.
- P. Discuss the main groups of antimicrobial agents and their mechanisms of action.

LABORATORY

- A. Understand and comply with laboratory safety rules and procedures, and universal precautions in a microbiology lab.
- B. Describe the light compound microscope and become proficient with its use.
- C. Understand the use of the different modifications of the light compound microscope and compare light microscopy with electron microscopy.
- D. Describe and perform some of the most widely used stains and wet mounts with emphasis on the gram stain. Discuss their significance in the identification of microorganisms.
- E. Perform basic Microbiology procedures used in the transfer, isolation, and observation of some of the most commonly encountered bacteria of clinical significance.
- F. Understand the use of the different types of bacterial culture media in facilitating the growth, isolation, and identification of different organisms.
- G. Perform basic bacterial identification procedures using conventional biochemical testing and a multi-test system.
- H. Learn basic identification protocols based on organism microscopic morphology for some of the common fungi and parasites.
- I. Discuss the main methods of antibiotic susceptibility testing.

III. Evaluation

The type and number of exams will be determined by the instructor. A minimum of four lecture written exams, two laboratory exams and practical exams are recommended. The lecture/lab ratio for grading will be 75% for lecture (3 credit hours) and 25% for laboratory (1 credit hour)

Grading scale:

90 –100 = A
80 –89 = B
70 –79 = C
60 –69 = D
Below 60 = F

IV. Disability Statement (Americans with/Disabilities Act [ADA])

EPCC offers a variety of services to persons with documented sensory, mental, physical, or temporary disabling conditions to promote success in classes. If you have a disability and believe you may need services, you are encouraged to contact the Center for Students with Disabilities to discuss your needs with a counselor. All discussions and documentation are kept confidential. Offices located: VV Rm C-112 (831-2426); TM Rm 1400 (831-5808); RG Rm B-201 (831-4198); NWC Rm M-54 (831-8815); and MDP Rm A-125 (831-7024)

V. 6 Drop Rule

Students who began attending Texas public institutions of higher education for the first time during the Fall 2007 semester or later are subject to a 6-Drop limit for all undergraduate classes. Developmental, ESL, Dual Credit and Early College High School classes are exempt from this rule. All students should consult with their instructor before dropping a class. Academic assistance is available. Students are encouraged to see Counseling Services if dropping because exemptions may apply. Refer to the EPCC catalog and website for additional information.

VI. Title IX and Sex Discrimination

Title 9 (20 U.S.C. 1681 & 34 C.F.R. Part 106) states the following "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any educational program or activity receiving Federal financial assistance." The Violence Against Women Act (VAWA) prohibits stalking, date violence, sexual violence, and domestic violence for all students, employees and visitors (male and female). If you have any concerns related to discrimination, harassment, or assault (of any type) you can contact the Assistant to the Vice President for Student and Enrollment Services at 915-831-2655. Employees can call the Manager of Employee Relations at 915-831-6458. Reports of sexual assault/violence may also be reported to EPCC Police at 915-831-2200.