

BIO 275 MICROBIOLOGY

COURSE DESCRIPTION:

Prerequisites: BIO 111 or BIO 168

Corequisites: None

This course covers principles of microbiology and the impact these organisms have on man and the environment. Topics include the various groups of microorganisms, their structure, physiology, genetics, microbial pathogenicity, infectious diseases, immunology, and selected practical applications. Upon completion, students should be able to demonstrate knowledge and skills including microscopy, aseptic technique, staining, culture methods, and identification of microorganisms. *This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a pre-major and/or elective course requirement.* Course Hours Per Week: Class, 3. Lab, 3. Semester Hours Credit, 4.

LEARNING OUTCOMES:

Upon completion of this course, the student will demonstrate basic knowledge in the following:

- a. Comparative characteristics of microbial organisms
- b. General bacteriology and microbial techniques.
- c. Microbial metabolism and enzymes.
- d. Physical and chemical microbial control
- e. Collection and handling of laboratory specimens.
- f. Microbial genetics, mutation and biotechnology.
- g. Pathogenicity, virulence, and epidemiology
- h. Disease transmission and control of nosocomial infections
- i. Body defenses, immunology, and hypersensitivity
- j. Common bacterial, fungal, and viral diseases.
- k. Experimentation in clinical scenarios.

OUTLINE OF INSTRUCTION:

- I. General introduction
 - A. History
 - B. Classification of microbial life
 - C. Characteristics of prokaryotes
 - D. Characteristics of eukaryotes
 - E. Characteristics of viruses

- II. Microbial physiology

- A. Microbial respiration and fermentation.
- B. Microbial energetics and enzymes.
- C. Physical growth requirements
- D. Chemical growth requirements
- E. Culture media and staining procedures

III. Microbial genetics

- A. Bacterial and viral replication, transcription and translation.
- B. Regulation of genes.
- C. Genetic mutation and recombination.
- D. Biotechnology and genetic engineering.

IV. Microbial control

- A. Physical control
- B. Chemical control
- C. Antimicrobial drugs

V. Pathogenicity and epidemiology

- A. Resident and normal flora
- B. Mechanism of pathogenesis.
- C. Basic factors of epidemiology.
- D. Portals of entry and exit
- E. Vectors, reservoirs and modes of transmission.
- F. Nosocomial infections
- G. Epidemiology

VI. Host defenses

- A. Nonspecific resistance
- B. Specific immune resistance
- C. Disorders in immunity

VII. Microbial diseases

- A. Diseases of the respiratory tract
- B. Diseases of the gastrointestinal tract
- C. Diseases of the genitourinary tract
- D. Diseases of the nervous system
- E. Diseases of the skin
- F. Diseases of the blood and lymph

REQUIRED TEXTBOOKS AND MATERIALS:

Bauman, R. W. Microbiology. With Diseases by Body System. 2nd ed., San Francisco: Pearson Education, Inc., Benjamin Cummings, 2009.

Lab Modules. Durham Technical Community College.

SUGGESTED REFERENCES, PERIODICALS, AND VISUAL AIDS:

Numerous supplementary texts, programmed materials, and audiovisual packages are available in the Educational Resources Center. These materials may be utilized to reinforce the lecture and lab material or to provide material for independent study by the student.

STATEMENT OF STUDENTS WITH DISABILITIES:

Students who require academic accommodations due to any physical, psychological, or learning disability are encouraged to request assistance from a disability services counselor within the first two weeks of class. Likewise, students who potentially require emergency medical attention due to any chronic health condition are encouraged to disclose this information to a disability services counselor within the first two weeks of class. Counselors can be contacted by calling 536-7207, ext 1418 or by visiting the Student Development Office in the Phail Wynn Jr. Student Services Center, room 1309.