



## MASTER COURSE OUTLINE

Prepared By: Theresa Calip

Date: April 2021

## COURSE TITLE

Microbiology

## GENERAL COURSE INFORMATION

Dept.: BIOL&

Course Num: 260

(Formerly: BIO 215)

CIP Code: 26.0503

Intent Code: 11

Program Code:

Credits: 5

Total Contact Hrs Per Qtr.: 77

Lecture Hrs: 33

Lab Hrs: 44

Other Hrs: 0

Distribution Designation: Lab Science LS

## COURSE DESCRIPTION (as it will appear in the catalog)

An introduction to microbes and their activities. Emphasis will be given to the areas of bacteriology, immunology, virology and epidemiology. Four hours of lab per week is required for credit. Labs will deal with the culture and identification of organisms, as well as genetic transformation.

## PREREQUISITES

A grade of 2.0 or better in BIOL& 241, or on a college transcript within the last 5 years, or instructor permission.

## TEXTBOOK GUIDELINES

Recommended: A recent edition of a microbiology text such as *Microbiology*, Gerald J. Tortora, Benjamin/Cummings or departmental approval.

## COURSE LEARNING OUTCOMES

*Upon successful completion of the course, students should be able to demonstrate the following knowledge or skills:*

1. Demonstrate an understanding of the reasons for the appearance of new and emerging diseases applying them on exam or assignments.
2. Use his/her knowledge of microbial genetics and physiology by explaining the role of bacteria, viruses, fungi, and protozoa in their respective environments as well as in disease processes.
3. Explain the fundamentals of immunology in terms of defense against foreign agents, including bacteria, viruses, and parasites, innate and acquired immunity, vaccinations, allergies, and the role of epidemiology in the understanding and control of human disease.
4. Demonstrate acceptable aseptic technique by performing the laboratory tests necessary to identify unknown bacteria in laboratory exercises. Explain the mechanics of cell chemistry and metabolic processes in detail; relate variations to disease processes and conditions.

## INSTITUTIONAL OUTCOMES

IO3 Human Relations/Workplace Skills: Students will be able to demonstrate teamwork, ethics, appropriate safety awareness and/or workplace specific skills.

## COURSE CONTENT OUTLINE

1. Fundamental Characteristics of Microbes - Adaptation and evolution of pathogen populations; development of antibiotic resistance; new and emerging diseases
2. Microbial Metabolism: Respiration and Fermentation
3. The Prokaryotes and Protista
4. Functional Prokaryotic Anatomy
5. Viruses, Prions, and the Disease process
6. The Control of Microbes
7. Epidemiology
8. Immunology: Host Defense Mechanisms, Immunity, Vaccines
9. Antibody Mediated Immunity, Cell Mediated Immunity
10. Bacterial, Viral, and Parasitic Diseases in Human Systems

## LAB TOPICS: (in person and/or digital)

1. Compound Microscope: the use of oil immersion
2. Ubiquity of Microorganisms; Aseptic Transfer and Technique
3. Characteristics of Selective and Differential Media
4. Plate Streaking for Isolation; Colony Morphology
5. Smear Preparation, Gram Stain
6. Separation Outline of Respiratory Flora
7. Reading and Interpretation of Differentials
8. Culture of the Enterobacteriaceae
9. Antibiotic Sensitivities

## **DEPARTMENTAL GUIDELINES** (optional)

- The overall course percentage will be based on the following weighted categories:
  - Lecture exams (including a comprehensive final) collectively worth 45-55%,
  - Laboratory work (in-class and/or digital) remaining percentage (minimum 30%)
  - Class assignments/quizzes collectively worth 10-15% of the overall score.
- A standard grade scale will be used for this course with a 2.0 grade point corresponding to 72%.
- All exams are proctored. When possible, exams are held on campus. Online and hybrid courses may have exams online, but they must be proctored to ensure academic honesty.
- Lab is an essential part of this class and is required for credit. Students missing more than two labs will not be given credit for this course.
- PO5 should be assessed: Students will be able to solve problems by gathering, interpreting, combining and/or applying information from multiple sources.

  
DIVISION CHAIR APPROVAL

4/7/21  
DATE