

# COLLEGEWIDE COURSE OUTLINE OF RECORD

## BIOL 211, MICROBIOLOGY I

COURSE TITLE: Microbiology I

COURSE NUMBER: BIOL 211

PREREQUISITES: BIOL 101 Introductory Biology or APHY 101 Anatomy and Physiology I and earning a grade of "C" or better in MATH 050 Basic Algebra

SCHOOL: Liberal Arts and Sciences

PROGRAM: Liberal Arts

CREDIT HOURS: 3

CONTACT HOURS: Lecture: 2 Lab: 2

DATE OF LAST REVISION: Spring, 2004

EFFECTIVE DATE OF THIS REVISION: Fall, 2008

CATALOG DESCRIPTION: Presents an overview of microbiology including fundamental structures of microorganisms, their metabolism, classification and interaction with other living things, and the laboratory techniques for their study. Introduces industrial and clinical applications of microbiology.

MAJOR COURSE LEARNING OBJECTIVES: Upon successful completion of this course the student will be expected to:

1. Describe the general properties and characteristics of bacteria, fungi, parasites, and viruses.
2. Describe the divisions of microbiology and taxonomic classification of bacteria.
3. Identify the internal and external structures of the eukaryotic vs. the prokaryotic cell and define the function of each.
4. Use the bright field microscope in the study of microorganisms, identify the parts of the microscope, and state the function of each.
5. Understand and apply recommended guidelines for safe handling of microorganisms and infectious materials.
6. Describe and recognize various bacterial morphologies.
7. Perform and/or interpret the gram stain on both direct and indirect smears.
8. Describe the general principles of bacterial metabolism, nutrition, reproduction, and energy liberation and storage.
9. Discuss the structure of DNA and the processes of replication, transcription, and translation.
10. Discuss the use of physical and chemical methods and antimicrobial agents in the control of microorganisms.
11. Describe the epidemiology of various kinds of infectious diseases and the invasive mechanisms employed by bacteria.
12. Describe the processes of transfer of genetic information between bacteria including transformation, transduction, and conjugation.

13. Discuss the applications of general concepts in microbiology for food, agriculture, ecology, health, and industry.
14. Perform identification tests, use a flow diagram, and describe epidemiology and describe disease correlations.
15. Describe the fundamentals of recombinant DNA technologies, genetic engineering, and biotechnology as they relate to microbiology, medicine, industry and the environment.
16. Describe basic principles of immunology, immunity, and serological testing and interpretation.
17. Use appropriate microbiology media, test systems, and lab equipment.

COURSE CONTENT: Topical areas of study include --

Scope of microbiology	Fundamentals of chemistry
Microscopy and staining	Characteristics of prokaryotic and eukaryotic cells
Essential concepts of metabolism	Epidemiology and nosocomial infections
Growth and culturing of bacteria	Nonspecific host defenses and host systems
Recombinant DNA	Eukaryotic microorganisms and parasites
Viruses'	Host-microbe relationships and disease processes
Sterilization and disinfection	Immunology
Environmental microbiology	Applied microbiology
Bacteria	Microbial genetics

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Cheating on papers, tests or other academic works is a violation of College rules. No student shall engage in behavior that, in the judgment of the instructor of the class, may be construed as cheating. This may include, but is not limited to, plagiarism or other forms of academic dishonesty such as the acquisition without permission of tests or other academic materials and/or distribution of these materials and other academic work. This includes students who aid and abet as well as those who attempt such behavior.

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