University of Arkansas – Fort Smith
5210 Grand Avenue
P. O. Box 3649
Fort Smith, AR 72913–3649
479–788–7000

General Syllabus

BIOL 4203 Pathogenic Microbiology

Credit Hours: 3 Lecture Hours: 3 Laboratory Hours: 0

Prerequisite: BIOL 2503/ 2501General Microbiology/Laboratory

Effective Catalog: 2018~2019

I. Course Information

A. Catalog Description

A study of the morphology, physiology, and immunogenicity of disease-causing bacteria, viruses, and eukaryotic parasites. Additional topics will include methods of isolation, identification and control of pathogens and disease.

II. Student Learning Outcomes

A. Subject Matter

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

1. Analyze the basic principles of medical microbiology.
2. Examine the basic principles of the immune response.
3. Assess general principles of laboratory diagnostics.
4. Analyze the cause and treatment procedures associated with bacterial disease.
5. Evaluate the cause and treatment procedures associated with viral disease.
6. Divide the cause and treatment procedures associated with fungal disease.
7. Analyze the cause and treatment procedures associated with additional eukaryotic parasitic disease.

B. University Learning Outcomes

Pathogenic Microbiology enhances student abilities in the following areas:

Analytical Skills

Critical Thinking Skills: Students will critically evaluate scientific papers obtained from primary sources. Students will think through possible experiments that might be appropriately used to evaluate pathogenicity of microorganisms.

Communication Skills (written and oral)

Students will appropriately communicate factual information and reasoning in a written form via essay exam questions and written analysis of primary literature. Students will communicate factual information and reasoning verbally in a socially appropriate manner by interacting with classmates in small group settings when discussing literature.

Global and Cultural Perspectives
Students will demonstrate how their discipline impacts or is impacted by different cultures.

III. Major Course Topics

A. Basic Principles of Medical Microbiology
   1. Collection of specimens
   2. Specimen storage
   3. Culturing of microorganisms
B. Basic Concepts of the Immune Response
   1. Antigens and antibody structure
   2. Primary and Secondary immune responses
   3. Antibody function and humoral immunity
   4. Cellular immunity
C. General Principles of Laboratory Diagnosis
   1. Selective and differential media
   2. Rapid ID tests
   3. Immunological tests
   4. Fluorescent microscopy
D. Pathogenic Bacteriology
   1. Classification of bacteria
   2. Biochemical fingerprints of bacteria
   3. Common diagnostic tests for bacteria
E. Pathogenic Virology
   1. Classification of viruses
   2. Structure of viruses
   3. Immunological and fluorescent diagnostic tools for viruses
F. Pathogenic Mycology
   1. Classification of Fungi
   2. Cell structure and antifungal modes of action
   3. Diagnostic tests and dangers of fungal infection
G. Pathogenic Eukaryotic Parasitology
   1. Classification of protozoa and helminths
   2. Modes of action for antiparasitic medications
   3. Diagnostic tests used to identify common parasites