

Master Syllabus

BIO 2206 - Lab for Microbiology

Division: Science, Mathematics and Engineering

Department: Biology

Credit Hour Total: 0.0

Date Revised: June 2015

Course Description:

Students carry out aseptic techniques; simple and special staining procedures; methods utilized for culturing, isolation and identification of bacteria (known and unknown); molecular genetic and immunological methods dealing with microbes. Also, exercises involving eukaryotic microbes (fungi, protozoa and helminths) are conducted.

General Education Outcomes:

- Oral Communication Competency
- Written Communication Competency
- Critical Thinking/Problem Solving Competency
- Values/Citizenship/Community Competency
- Information Literacy Competency

Course Outcomes:

Basic Laboratory Competences

Properly care for and use the microscope. Carry out, successfully, bacterial staining techniques. Recognize, microscopically, a variety of bacterial shapes and arrangements.

Assessment Method: Locally developed exams

Performance Criteria: Receive at least 60% of all points possible

Bacterial Culture and Biochemical Characteristics

Recognize the colony characteristics of isolated colonies of known bacterial species. Properly inoculate differential media for conducting differential tests. Properly carry out biochemical and physiological test designed to differentiate (identify) bacterial species.

Assessment Method: Performance appraisals

Performance Criteria: Receive at least 60% of all points possible

Unknown Bacteria, Molecular Genetic, and Immunological Competencies.

Utilize techniques and knowledge gained from other competencies to identify unknown bacterial species. Perform correctly the molecular genetic transformation of bacterial cells. Perform correctly the immunological screening method for detection of antibodies against HIV in blood donor or patient sera.

Assessment Method: Locally developed exams

Performance Criteria: Receive at least 60% of all points possible

Outline:

Introduction to the microbiology laboratory and laboratory safety
Proper use and care of the microscope
Aseptic transfers
Bacterial smear preparation for staining and microscopy
Simple, gram, and other staining methods
Bacterial cultural characteristics and growth aerobically and anaerobically
Microbial metabolism and differential tests for identifying unknown bacteria
Antimicrobial susceptibility testing
Clinical microbiology (identification of unknowns, culturing of urine samples)
Genetic transformation of bacterial cells
ELISA for HIV infection
Examination of eukaryotic microbes