BAKER COLLEGE
STUDENT LEARNING OUTCOMES

BIO2411 Microbiology Lab
1 Semester Hours

Student Learning Outcomes & Enabling Objectives

1. Demonstrate aseptic technique and safe practices while handling live cultures and potential pathogens in laboratory experiments.
2. Demonstrate the ability to use a microscope.
    a. Identify the parts of the light microscope.
    b. Demonstrate the ability to find and identify bacteria under oil immersion.
3. Prepare a bacterial smear.
4. Perform different staining techniques.
    a. Demonstrate a simple stain.
    b. Demonstrate a negative stain.
    c. Demonstrate Gram stain.
5. Prepare a pure bacterial culture using the streak plate technique.
6. Utilize selective and differential media to isolate bacteria.
    a. Identify bacteria macroscopically using common colony characteristics.
7. Perform biochemical tests to identify bacteria.
    a. Demonstrate testing for sugar fermentation, starch digestion, SIM tubes, and catalase.
    b. Evaluate environmental factors that affect microbial growth.
8. Demonstrate cultivation of the fungi.
    a. Identify reproductive structures of fungi.
9. Distinguish between protozoans, round worms, tapeworms, and flukes.
    a. Identify characteristic features for each type.
    b. Identify basic components of the different life cycles.
10. Perform laboratory exercises, using the scientific method (observations, hypothesis, experiment, analysis of data and conclusion).
    a. Identification of an unknown bacteria.
    b. Demonstrate the effects of antibiotics on bacteria utilizing Kirby-Bauer technique.
    c. Determine the effectiveness of various antiseptics.
    d. Detect the presence of antigens in a patient's serum using an ELISA test.
11. Evaluate various physical and chemical control methods for microorganisms.
12. Demonstrate the epidemic principles of common source and propagated modes of disease transmission in simulated epidemics.

13. Demonstrate the use of restriction enzymes to digest DNA for analysis and gel electrophoresis.
14. Demonstrate bacterial transformation using bacterial plasmids.

These SLOs are not approved for experiential credit.

Effective: Fall 2017