

**Course Description****MLS4461 | Clinical Diagnostic Microbiology | 3.00 credits**

Clinical Diagnostic Microbiology provides concepts in bacteriology identification methods, rapid identification methods for parasites and fungi, and an overview of virology methodology.

**Course Competencies**

**Competency 1:** The student will demonstrate knowledge of traditional and rapid identification methods by:

1. Explaining the principles and efficacy of at least three laboratory instruments that are currently used to identify organisms in the laboratory
2. Comparing and contrasting at least five rapid identification methods for microbiology identification of bacteria, fungi, and parasites
3. Analyzing serological diagnostic identification for infectious diseases

**Competency 2:** The student will demonstrate knowledge and identification methods of Gram-Positive Rods and Cocci commonly encountered in clinical microbiology by:

1. Analyzing identification methods of catalase-positive Gram-positive Positive Cocci such as Staphylococci, Streptococci, and Micrococci
2. Explaining catalase-negative Gram-negative Cocci such as Streptococci and Enterococci
3. Explaining identifying characteristics of Bacillus spp, Listeria, Lactobacillus, and similar organisms
4. Explaining Gram-Positive Anaerobes as it relates to diseases in the community

**Competency 3:** The student will demonstrate knowledge and identification methods for organisms belonging to the Enterobacteriaceae family by:

1. Explaining the general principles of media used for identifying and distinguishing members of the family Enterobacteriaceae
2. Identifying the intestinal pathogens that are considered pathogenic, such as Salmonella spp, Shigella spp, and Yersinia enterocolitica
3. Differentiating between members of the opportunistic pathogen by using biochemical reactions and explaining their significance
4. Explaining cephalosporin and carbapenem resistance

**Competency 4:** The student will demonstrate knowledge and identification methods for Parasitology and Mycology by:

1. Analyzing and identifying the characteristics of parasites
2. Explaining the life cycle of at least one representative from the Protozoa, Plasmodium spp, Cestoda, Nematoda, and Digenea groups
3. Recognizing and differentiating pathogenic organisms from nonpathogenic Protozoa
4. Explaining rapid and conventional identification methods of commonly encountered yeast, dermatophytes, and dimorphic fungi

**Competency 5:** The student will demonstrate knowledge of antimicrobial agents' methodology of susceptibility testing by:

1. Explaining cephalosporin and carbapenem resistance as it relates to Enterobacteriaceae
2. Analyzing antimicrobial agents and their mode of action
3. Explaining the mechanisms for antibiotic resistance
4. Analyzing methodology for antimicrobial susceptibility testing

**Learning Outcomes:**

- Communicate effectively using listening, speaking, reading, and writing skills
- Solve problems using critical and creative thinking and scientific reasoning

- Demonstrate knowledge of ethical thinking and its application to issues in society