J. Sargeant Reynolds Community College
Course Content Summary

Course Prefix and Number: MDL 252 **Credits:** 3

Course Title: Clinical Microbiology II

Course Description: Teaches handling, isolation, and identification of pathogenic microorganisms. Emphasizes clinical techniques of bacteriology, mycology, parasitology and virology. Part II of II. Prerequisite: MDL 251 (or BIO 205). Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

General Course Purpose: Provides the basic theory and technique of identifying less commonly encountered microorganisms. These organisms will include fungi, parasites, viruses, and bacteria with unusual requirements. Topics will include safety precautions, proper collection, purpose and selection of media, isolation, staining and testing used in the clinical laboratory setting; the role of these organisms in human disease; conventional, automated, molecular, and serological methods; infection control; agents of bioterrorism; quality assurance.

Course Prerequisites and Co-requisites:
Prerequisite: MDL 251 (or BIO 205)

Student Learning Outcomes:
Upon completing the course, the student will be able to

a. Demonstrate knowledge of the basic microbiology principles and identification techniques learned in Clinical Microbiology I;
b. Describe the principles, purpose, and methods of common antibiotic susceptibility testing;
c. Perform and interpret Kirby Bauer disk diffusion testing;
d. Perform and interpret Minimal Inhibitory Concentration testing;
e. Describe mechanism of action for classes of antimicrobials;
f. Relate antimicrobial testing to treatment of specific organisms and patient diseases;
g. Describe the key characteristics related to identification of Chlamydia, Rickettsia, Spirochetes, Mycoplasma and Ureaplasma;
h. Identify the characteristics, common collection techniques, transport media, and storage requirements for specific Viruses;
i. Describe clinical syndromes and identification techniques related to Mycobacterium species;
j. Differentiate between groups of clinically significant fungi and the related diseases;
k. Distinguish between human parasitic organisms based on microscopic morphology;
l. Describe the sources of parasitic infection (reservoirs, vectors);
m. Describe major organ system infections and the organisms involved;
n. Identify proper collection techniques for specific body sites;
o. Demonstrate knowledge of the importance of Infection control procedures in patient management and safety;
p. Describe purpose and proper usage of biohazard level 2, 3 and 4 labs;
q. Identify microbiological agents of bioterrorism;
r. Explain the principle and use of microbiology instrumentation;
s. Demonstrate knowledge of alternate testing methods for microbiology;
t. Complete a tour of the Virginia State Consolidated Labs and describe the relevant safety and security procedures;
u. Present a two-page, written assignment along with an oral presentation on alternate microbiology methods; and
v. Define key terminology provided in lecture material and textbook.

Major Topics to Be Included:

a. Safety in the clinical lab
b. Proper use of BSL (biosafety level) labs
c. Quality control and quality assurance
d. Mechanisms of antimicrobial resistance
e. Susceptibility testing
f. Chlamydia, rickettsia, mycoplasma
g. Spirochetes
h. Mycobacterium
i. Virology
j. Mycology
k. Parasitology
l. Diagnosis by organ system
m. Infection control
n. Automation in the microbiology lab
o. Agents of bioterrorism
p. Molecular, immunochemical and serological methods

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