BARTON COMMUNITY COLLEGE
COURSE SYLLABUS

I. GENERAL COURSE INFORMATION

Course Number: MLTC 1505
Course Title: MLT Pathogenic Microbiology
Credit Hours: 6
Prerequisite: Fundamentals of General Chemistry and General Microbiology and Anatomy & Physiology or equivalents, passed with a minimum of a C or instructor permission.
Division/Discipline: Workforce Training and Community Education Division, Medical Laboratory Technology Program.
Course Description: This course will survey microbiology as it is applicable to a clinical laboratory. Procedures for routine specimen collection will be discussed and practiced. Normal flora and pathogenic bacteria will be identified by morphology, staining characteristics, growth on selective media, biochemical testing, and serological methods. Basic theory in antimicrobial susceptibility testing will be covered. Principles of all tests will be studied. Study of viruses and chlamydia will be limited to the processing and handling of specimens for consultant referral and principles of serological testing. Normal and pathogenic parasites and fungal elements will be identified and procedures utilized for proper identification will be discussed. Hands-on laboratory time is required.

II. INSTRUCTOR INFORMATION

III. COLLEGE POLICES

Students and faculty of Barton Community College constitute a special community engaged in the process of education. The College assumes that its students and faculty will demonstrate a code of personal honor that is based upon courtesy, integrity, common sense, and respect for others both within and outside the classroom.

Plagiarism on any academic endeavors at Barton Community College will not be tolerated. The student is responsible for learning the rules of, and avoiding instances of, intentional or unintentional plagiarism. Information about academic integrity is located in the Student Handbook.

The College reserves the right to suspend a student for conduct that is determined to be detrimental to the College educational endeavors as outlined in the College Catalog, Student Handbook, and College Policy & Procedure Manual. (Most up-to-date documents are available on the College webpage.)

Any student seeking an accommodation under the provisions of the Americans with Disability Act (ADA) is to notify Student Support Services via email at disabilityservices@bartonccc.edu

IV. COURSE AS VIEWED IN THE TOTAL CURRICULUM

This is one of a series of technical courses for the Medical Laboratory Technology Program. This course is designed to develop the knowledge and competencies related to Clinical Microbiology and to develop useful job-oriented skills, critical thinking and safety practices for medical laboratory testing and includes information, at a minimum, from the current Body of Knowledge for Medical Laboratory Technicians.

Students planning to transfer credit for a baccalaureate degree will be granted transfer credit only as determined by the four year institution.

The transferability of all college courses will vary among institutions, and perhaps even among departments, colleges, or programs within an institution. Institutional requirements may also change without prior notification. Students are responsible to obtain relevant information from intended transfer institutions to ensure that the courses the student enrolls in are the most appropriate set of courses for the transfer program

V. ASSESSMENT OF STUDENT LEARNING

Barton Community College is committed to the assessment of student learning and to quality education. Assessment activities provide a means to develop an understanding of how students learn, what they know, and what they can do with their knowledge. Results from these various activities guide Barton, as a learning college, in finding ways to improve student learning.

<u>Course Outcomes, Competencies, and Supplemental Competencies:</u>

A. Relate the proper specimen collection and handling, type of quality control used, reference ranges, principle of analysis currently available, and sources of analytical errors for each of the analytes discussed or approached in the course.
   1. Demonstrate an understanding of Quality Control, Quality Assurance, and HIPAA (Health Insurance Portability and Accountability Act of 1996) Programs.
   2. Discuss and identify all aspects of proper specimen management
   3. Demonstrate proper use and care of associated laboratory equipment

B. Perform all procedures with regard to prescribed safety protocol and confidentiality.
   1. Exhibit safe laboratory practices according to established laboratory protocol.
   2. Demonstrate proper affective behavior
   3. Exhibit professional conduct and positive interpersonal communication skills with patients, laboratory personnel, and other health care professionals.

C. Correlate abnormal results with the most likely disease process by determining the clinical significance of the findings.
   1. Describe the generally accepted concept of normal flora versus pathogenic flora for major culture sites.
   2. Describe disease relationships of the major human pathogenic organisms.

3. Identify Anaerobes through the use of critical thinking case study problems.
4. Identify Gram Negative cocci through the use of critical thinking case study problems.

D. Relate the transmission, entry into their host, and disease mechanism of common human pathogenic bacteria with the collection and processing of clinical specimens for bacteriological culture.

E. Describe the appropriate methods of collecting clinical specimen given the body site and type of organism suspected.
   1. Identify the appropriate media needed for cultures from different collection sites.
   2. Correlate specimen cultures and selection of proper identification testing methods.

F. Describe and perform accurately and safely basic microbiology techniques including microscopic, staining, plating, sub-culturing, and identification techniques.
   1. Demonstrate the proper plating procedure (4 quadrant streaking)
   2. Demonstrate proper Gram Staining technique.
   3. Correlate Gram Stain results with colony morphology.
   4. Demonstrate a “direct gram stain” and evaluate and correlate the results with the pathology of the culture.
   5. List staining characteristics of human pathogenic organisms.

G. Relate the physical and biochemical growth requirements of specific bacteria to the composition of general, selective, and identification media.

H. Utilize simple and compound stains, colony characteristics, and growth on selective media to determine initial grouping of bacteria commonly encountered in clinical specimens to determine identification steps.
   1. Differentiate and identify normal flora and possible pathogenic bacteria from clinical specimens.
   2. Utilize biochemical testing for the purpose of identification.
   3. Discuss and relate the principle of each test to the bacteria and its biochemical makeup.
   4. List major biochemical properties of human pathogenic organisms.
   5. Describe different methods of manual tests.
      a. Perform catalase and coagulase testing, to include both slide and tube.
      b. Perform API strip testing.
      c. Perform Rapid Strep ID testing.
      d. Perform classic “Five Tube Set-up”

   6. Perform identification of the following organisms:
      a. Staphylococcus
      b. Streptococcus
      c. Enterobacteriaceae
      d. Non-Fermenters

7. Perform isolation, identification, and culture completion of human organisms from unknown specimens.

I. Identify common normal flora and possible pathogens from clinical specimens by the utilization of biochemical testing. Relate the principle behind each test utilized.
   1. Explain Antimicrobial Susceptibility and correlate results with human pathogenic organisms.
   2. Discuss and relate resistance and sensitivity patterns with human pathogenic organisms.
   3. Discuss classic and conventional methods of susceptibility testing.
   4. Describe the method of testing using the classic “Kirby Bauer” system.
   5. Describe methods of automated testing for identification and susceptibility testing currently utilized in the medical laboratory.

J. Relate the method of transport of either culture or specimen for unusual pathogenic organism. Briefly discuss the characteristics that would be used to identify the organism.
   1. Describe methods of processing and transportation of viruses, Chlamydia, mycobacterium and mycology specimens.

VI. INSTRUCTOR'S EXPECTATIONS OF STUDENTS IN CLASS
VII. TEXTBOOKS AND OTHER REQUIRED MATERIALS
VIII. REFERENCES
IX. METHODS OF INSTRUCTION AND EVALUATION
X. ATTENDANCE REQUIREMENTS
XI. COURSE OUTLINE

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