CASPER COLLEGE COURSE SYLLABUS
MLTK 2600 Clinical Microbiology

Semester/Year: Fall 2006
Lecture Hours: 0 Lab Hours: 4 Credit Hours: 2
Class Time: 9:00 – 10:50 am Days: TH, F Room: LS 204

Instructor’s Name: Jodi Rudd
Instructor's Contact Information: Office Phone: 268-2632 Email: jrudd@caspercollege.edu
Office Hours: By appointment 8:00-9:00, 11:00-12:00 TH, F and by appointment.

Course Description:
Concentrated laboratory instruction in clinical microbiology including methods for recovery, identification of pathogens, culture techniques, procedures, antibiotic testing and interpretation of clinical data. Emphasis is on clinical specimens, testing algorithms and data correlation including diagnosis, public health, and quality control. This course provides the essential overview of information and technical competencies needed for the clinical experience for medical laboratory technician majors.

Statement of Prerequisites:
MOLB 2220
Health Requirements You will need to obtain proof of the following health requirements to be in student laboratory.
• Health Insurance (Private or available through Casper College)
• Hepatitis B vaccination (at least the first in the series of three)

Goal:
Students will gain experience and proficiency in advanced principles and procedures of clinical microbiology. Students will be able to identify infectious agents, select and perform tests that lead to differential diagnosis, and relate clinical findings to disease states.

Outcomes:
1. Evaluate patient specimen acceptability for analysis.
2. Correlate clinical signs and symptoms associated with diseases caused by bacterial pathogens
3. Distinguish between normal flora and pathogenic organisms based upon colony characteristics.
4. Monitor and evaluate quality assurance data, identify errors and formulate plan for corrective action.
5. Characterize key microscopic and macroscopic features of bacterial pathogens.
6. Perform and interpret various staining techniques.
7. Justify appropriate media for the cultivation of pathogens.
8. Compare and contrast clinical laboratory procedures, interpret data and predict the pathogen isolated.
9. Compare different antibiotic susceptibility test methods, interpret results of antimicrobial susceptibility tests and correlate with patient therapy.
10. Analyze unknown pathogens, select appropriate test methods, interpret results, and report out identification.
11. Critique patient results and select appropriate follow-up tests.

Methodology:
Short lectures and student discussion will be incorporated into a mostly laboratory setting for student instruction. Laboratory activities will be independent and will be assisted by one-on-one instruction.

Evaluation Criteria:

REQUIRED STUDENT TASK/ASSIGNMENTS

The required tasks and assignments are used to evaluate the student’s acquisition and comprehension of the learning objectives. Assignments are designed to allow students to put the information learned in class and in readings into practice making judgments based on the data presented.

Laboratory exercises (30%)
Each student will complete ten laboratory exercises. In each lab, the students will use the culture media and techniques utilized in clinical laboratories to identify organisms in a particular bacterial family.

Unknowns (30%)
The student will be given organisms to identify on their own. Students must select appropriate culture media based upon the type of sample and select tests to identify the organism in question. The student will keep a log of all testing performed. Grades will be based not only on determining the correct identification but also on the logic used to arrive at that conclusion.

Index Cards (20%)

Examinations (20%)
Unit exams will cover material listed in the learning objectives for each of the defined segments or units outlined on the lecture schedule. Most material will be covered specifically in class but exam question may cover materials presented in the assigned reading. CLS review books (ASCP, NCA and others) provide practice questions for subjects on the course outline.

GRADING:

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<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>92-100%</td>
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<td>B</td>
<td>82-91%</td>
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<td>C</td>
<td>70-81%</td>
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<td>D</td>
<td>60-69%</td>
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<td>F</td>
<td>&lt;60%</td>
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<tr>
<td>Final grades:</td>
<td>Lab exercises</td>
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<tr>
<td>Unknows</td>
<td>30%</td>
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<tr>
<td>Index Cards</td>
<td>20%</td>
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<tr>
<td>Examinations</td>
<td>20%</td>
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</table>
Required Text

Required Personal Protective Equipment (PPE)
Gloves
Scrubs (any color)
Safety goggles

Class Policies: Last Date to Change to Audit Status or to Withdraw with a W Grade is the Casper College deadlines.
Exams must be completed without the use of textbooks, notes or assistance from classmates. Attendance is required for lecture and student labs. No make-up labs will be available.

Student Rights and Responsibilities: Please refer to the Casper College Student Conduct and Judicial Code for information concerning your rights and responsibilities as a Casper College Student.

Chain of Command: If you have any problems with this class, you should first contact the instructor in order to solve the problem. If you are not satisfied with the solution offered by the instructor, you should then take your problem through the appropriate chain of command starting with the department head, then the division chair, and lastly the vice president for academic affairs.

Student complaints should be addressed through the following chain of command:
1) The instructor of your course. (Jodi Rudd /Audrey Hentzen)
2) Biology Department Chair (Ms. Brandy Atnip)
3) The Life Science Division Chair, (Dr. Clifford)
4) The Vice President for Academic Affairs (Dr. Carmen Simone)

Academic Dishonesty - Cheating & Plagiarism: Casper College demands intellectual honesty. Proven plagiarism or any form of dishonesty associated with the academic process can result in the offender failing the course in which the offense was committed or expulsion from school. See the Casper College Student Code of Conduct.

ADA Accommodations Policy: It is the policy of Casper College to provide appropriate accommodations to any student with a documented disability. If you have a need for accommodation in this course, please make an appointment to see me at your earliest convenience.
Course content:
SPECIMEN COLLECTION AND PROCESSING
  a. Urine
  b. Respiratory specimens
  c. Blood/ bone marrow
  d. Feces
  e. Abscesses/ wounds
  f. Sterile body fluids
  g. Tissues
  h. Others
MICROSCOPIC EXAMINATIONS
  a. Stains
    1. Gram stain
    2. Acridine orange stain
    3. Special stains
  b. Wet mounts
  c. Microscopic morphology
SPECIMEN PROCESSING
  a. Selection of media
  b. Inoculation
    a. Incubation environments
    b. Isolation of colonies
IDENTIFICATION OF MICROORGANISMS
  a. Colony characteristics
  b. Pathogens and normal flora identification
  c. Microscopic morphology
  d. Biochemical characterization
  e. Bacterial serotyping
  f. Antibiotic susceptibility
GRAM NEGATIVE ORGANISMS
  a. Signs and symptoms of gram negative infection
  b. Enterobacteriaceae
  c. Nonfermenters
  d. *Aeromonas, Plesiomonas, and Vibrio*
  e. *Campylobacter and Helicobacter*
  f. HACEK and *Legionella*
  g. Other gram negative coccobacilli
  h. *Neisseria*
GRAM POSITIVE ORGANISMS
  a. Signs and symptoms of gram positive infection
  b. *Staphylococcus*
  c. *Micrococcus*
  d. *Streptococcus and Enterococcus*
  e. *Bacillus*
  f. *Listeria*
g. *Lactobacillus*

**ANAEROBIC ORGANISMS**

a. Signs and symptoms of anaerobic infection
b. *Bacteroides*
c. *Fusobacterium*
d. *Clostridium*
g. *Peptostreptococcus*
h. *Peptococcus*

**MYCOBACTERIA**

a. Signs and symptoms of mycobacterial infection
b. *Mycobacterium tuberculosis*
c. Atypical *Mycobacteria*

**MISCELLANEOUS MICROORGANISMS**

a. Spirochetes
b. *Chlamydia*
c. *Rickettsia*
d. Viruses

**SAFETY PROCEDURES**

a. Disposal of infectious material
b. Autoclaving

**SUSCEPTIBILITY TESTING**

a. Kirby-Bauer
b. Minimum inhibitory concentration

**QUALITY ASSURANCE MANAGEMENT**

a. Media
b. Instrument
c. Reporting

**SPECIAL TECHNIQUES**

a. Fluorochrome and acid-fast stain
b. DNA probes

c. **AUTOMATION**

a. Blood Culture
b. MicroScan
c. Vitek
d. Bectec
<table>
<thead>
<tr>
<th>Month</th>
<th>Day</th>
<th>Lab</th>
<th>Activity</th>
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<tbody>
<tr>
<td>Aug</td>
<td>31</td>
<td>Lab</td>
<td>Welcome-Safety, specimen collection &amp; rejection</td>
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<tr>
<td>Sept</td>
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<td>Lab</td>
<td>Media types and quality control</td>
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<td>7</td>
<td>Lab</td>
<td>Intro to gram pos/neg gram pos. flow id scheme</td>
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<td>8</td>
<td>Lab</td>
<td>Gram pos flow id scheme and testing</td>
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<td>14</td>
<td>Lab</td>
<td>Media recap, Staph. organisms</td>
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<td>15</td>
<td>Lab</td>
<td>Staph. organisms continued</td>
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<td>21</td>
<td>Lab</td>
<td>Streps (alpha/beta hemolysis)/more work on Staph</td>
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<td>Date</td>
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<td>Procedure</td>
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<td>22</td>
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<td>Staph and Strep con’t</td>
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<td>28</td>
<td>Lab</td>
<td>Throat culture and gram negatives (LF/NLF)</td>
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<td>29</td>
<td>Lab</td>
<td>Throat culture workup, more on gram negatives</td>
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<td>Oct</td>
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<td>5</td>
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<td>Gram negative lactose fermenters/throat culture</td>
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<td>12</td>
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<td>Sputum, stool, gc culture-results from MTL</td>
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<td>23</td>
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Finals

Final exam/cards due