CASPER COLLEGE COURSE SYLLABUS
MLTK 2650 H1 Clinical Microbiology II

Semester/Year: Fall 2015

Lecture Hours: 1	Lab Hours: 4	Credit Hours: 2
Lecture: Online (moodle4me)	Lab Days: 5, 2-day lab sessions *9/11-12 9/25-26 10/23/24 11/13-14 12/11-12*	Friday Lab 8am-11am Saturday Lab 8am-10am

Instructor's Name: Bernardino D. Madsen MT (ASCP)

Instructor's Contact Information:	Office Phone: 268-2522	Instructor's email: dmadsen@caspercollege.edu

Office Hours: Monday 8-10, Tuesday 4-6, Wednesday 9-10, Thursday 10-11 Aley 212

Course Description:
Concentrated laboratory instruction in clinical microbiology focusing on fastidious microorganisms, mycobacterium, parasites, viruses and pathogenic fungi. Laboratory skills will include the identification of pathogens, culture techniques, procedures, and interpretation of clinical data. This course provides an essential overview of information and technical competencies needed for the clinical experience for medical laboratory technician majors.

Statement of Prerequisites:
MLTK 2600 or Instructors Permission
Additional Program 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 viral, fungal and bacterial pathogens
3. Monitor and evaluate quality assurance data, identify errors and formulate plan for corrective action.
4. Characterize key microscopic and macroscopic features of bacterial, viral, parasitic and fungal pathogens.
5. Perform and interpret various staining techniques.

6. Justify appropriate media for the cultivation of pathogens.
7. Compare and contrast clinical laboratory procedures, interpret data and predict differential diagnosis.
8. Analyze unknown pathogens, select appropriate test methods, interpret results, and report pathogen identification.
9. Critique patient results and select appropriate follow-up tests
10. Solve problems using critical thinking and creativity (CC general education outcome #3)

Methodology:
On-line lecture and student discussion correlating with laboratory student instruction. Laboratory activities will be performed independently during lab sessions and students 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 readings into practice making judgments based on the data presented.

Laboratory notebook and worksheets (50%)
In each lab, the students will use the culture media and techniques utilized in clinical laboratories to identify organisms in a particular bacterial family. Results will be recorded in the notebook and checked weekly by the instructor. Worksheets must be completed by the first lab meeting of the following week.

Examinations (50%)
Weekly on-line quizzes will cover material listed in the learning objectives for each of the defined segments or labs outlined on the schedule. Quizzes may include material from the previous week's lab or they may be on the current lab for the week. Most material will be covered specifically in class but information may be presented in the assigned reading. CLS review books (ASCP, NCA and others) provide practice questions for subjects on the course outline. There will be periodic exam containing a written and practical laboratory component as shown in the calendar. There will be a comprehensive written final exam during finals week.

GRADING:
A = 92-100%
B = 82-91%
C = 70-81%
D = 60-69%
F = <60%

Required Text
Text book of Diagnostic Microbiology. 3rd edition. Mahon, Lehman and Manuselis.

Required Personal Protective Equipment (PPE)
Gloves

Scrubs (any color)
Safety goggles/glasses

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. Bernardino Madsen
2) MLTK Program Director. Dr. Audrey Hentzen
3) Dean of Health Science. Dr. Tammy Frankland
4) The Interim Vice President for Academic Affairs. Dr. Shawn Powell

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.

Official Means of Communication: Casper College faculty and staff will employ the student's assigned Casper College email account as a primary method of communication. Students are responsible to check their account regularly.

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. Transport Media
i. Others

MICROSCOPIC EXAMINATIONS

A. Stains

1. Gram stain
2. Acridine orange stain
3. Acid Fast
4. KOH preps
5. 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. Microscopic morphology
c. Biochemical characterization
d. Pathogen serotyping
e. Immuno Assays
f. Molecular Identification Techniques

FUNGUS

A. Structure and function
B. Taxonomy of clinically significant fungi
C. Mycoses
D. Laboratory diagnosis of fungi
   1) Yeast (e.g., *Candida, Cryptococcus*)
   2) Dimorphic fungi (e.g., *Blastomyces*,
   3) *Coccidioides, Histoplasma, Sporothrix*)
   4) Dermatophytes (e.g.,*direct specimen examination*)
   5) Zygomycetes (e.g., *Rhizopus*)
   6) Opportunistic molds/septate hyaline
   7) molds (e.g., *Aspergillus, Penicillium*)
   8) *Pneumocystis*

PARASITES

A. Acceptable specimens
B. Examination of specimens
C. Immunological Diagnosis
   1) Blood and tissue protozoa
      i. (e.g., *Plasmodium, Trypanosoma*)
   2) Intestinal and urogenital protozoa
      i. (e.g., *Cryptosporidium, Entamoeba,*
   3) *Giardia,* and *Trichomonas*)
   4) Intestinal and tissue helminths

D. (e.g., *Ascaris, Enterobius,* hookworm,
E. *Schistosoma, Taenia, Trichinella,*
F. Medically important Parasitic Agents

1) Protoza
2) Apicomplexa
3) Microsporidia
4) Helminths

VIRUSES

a. Characteristics of Viruses
b. Diagnosis of Viral Infections
c. Adenoviride
d. Herpesviridae
e. Papoviridae
f. Poxviridae
g. Parvoviridae
h. Reoviridae
i. Arenaviridae
j. Orthomyxoviridae
k. Retroviridae
l. Hepatitis: A, B, C, D, E

MYCOBACTERIA

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

MISCELLANEOUS MICROORGANISMS

a. Spirochetes
b. *Chlamydia*
c. *Rickettisia*
d. *Yersina*

SAFETY PROCEDURES

a. Disposal of infectious material
b. Autoclaving

QUALITY ASSURANCE MANAGEMENT

a. Media
b. Instrument
c. Reporting
d. Q.C. practices and interpretation

AUTOMATION

a. Blood Culture
b. MicroScan