CASPER COLLEGE COURSE SYLLABUS
MLTK 1700 H1 & H2: Microscopy: Urinalysis and Body Fluids

Semester/Year: Spring 2016

Lecture Hours: 1          Lab Hours: 4          Credit Hours: 2

Lecture: Online (Moodle4me) Lab Days: online internet materials; 5 lab days; on campus; Lab Dates: For
H1 (8:00AM to 12:00PM) - 1/28, 2/18, 3/3, 4/7, 5/5; For
H2 (11:00AM to 3:00PM) – 1/30, 2/20, 3/5, 4/9, 5/7.

Instructor’s Name: Charlie P. Cruz

Instructor's Contact Information: Office Phone: (307) 268-2003 Email: charlie.cruz@caspercollege.edu

Office Hours: By appointment and through teleconferencing.

Course Description: A variety of microscopic techniques are demonstrated and the advantages of each discussed. Theory and laboratory practice of routine and specialized procedures in analysis of urine and selected body fluids is presented. Clinical correlation between test results and disease states is emphasized.

Statement of Prerequisites:
BIOL 1000 or BIOL 1010 and MOLB 2210.

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 microscopy as it relates to urinalysis and testing of body fluids. Students will relate clinical observations to normal and abnormal physiology, disorders and disease states.

Outcomes:
1. Solve problems using critical thinking and creativity.

Course Objectives:
1. Compare and contrast various types of microscopic techniques and their application in the clinical laboratory.
2. Describe the anatomy of the kidney and relate its structure to the process of urine formation.
3. Perform and interpret urine test results, detect abnormalities, assign a diagnosis and prescribe follow-up testing.
4. Describe how fluids such as spinal fluid, serous fluid, synovial fluid and amniotic fluid are formed.

5. Perform body fluid tests and interpret results, detect abnormalities, assign a diagnosis and prescribe follow-up testing.

Methodology:
Online lectures and student discussion through internet delivery accompanied by laboratory instruction and activities. Laboratory activities will be in class and on campus 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 in readings into practice making judgments based on the data presented.

Lab Assignments
Students will be responsible for activities on each laboratory experience, worksheets and activities. One laboratory procedure will be written based upon nationally accepted laboratory guidelines, testing procedures and quality assurance. This procedure will be focused on microscopic techniques and be submitted in electronic format. More later.

Case Studies
Students will be given case studies that include relevant patient history and laboratory test results. The students will evaluate patient date and answer questions concerning the results and make a diagnosis based on their knowledge

Examinations
Exams will cover materials listed in the learning objectives for defined segments or units outlined on the lecture schedule. Exams may include the performance of laboratory testing of clinical specimens. Most material will be covered specifically in class but exam questions may cover materials presented in the assigned reading. You may want to purchase review books (ASCP, NCA and others), which provide practice questions for subjects we cover in class. There will be three exams and a comprehensive final. You must be present to take “pop” quizzes. Exams can only be made up if prior notification of absence is provided by the student.

GRADING: NO LATE WORK WILL BE ACCEPTED OR GRADED. IF YOU HAVE A PROBLEM AND NEED AN EXTENSION TALK WITH THE INSTRUCTOR.
A = 92-100% Final grades: Exams/Pop Quizzes/Final
B = 82-91% Lab Reports
C = 70-81% Case Studies
D = 60-69%
F = <60%
Required Text

Required Personal Protective Equipment (PPE) (you will need to purchase)
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. (Charlie P. Cruz)
2) The Program Director (Mr. Bernardino Madsen)
3) The Dean of Health Sciences (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 for more information on this topic.

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. This is also, where you will find course evaluation links during course evaluation periods.

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:

MICROSCOPY
   Brightfield
   Phase-contrast
   Polarized light

ROUTINE URINE TESTING
   Renal anatomy
   Urine formation
   Specimen collection and preservation
   Physical tests
      1. Appearance
      2. Odor
      3. Volume
   Chemical tests
      1. pH
      2. Specific Gravity
      3. Protein
      4. Blood
      5. Glucose
      6. Ketones
      7. Leukocyte esterase
      8. Nitrite
      9. Urobilinogen
     10. Bilirubin
   Microscopic exam
      1. Cells
      2. Casts
      3. Crystals
   Quality Assurance
   Correlating results with disease

OTHER TESTS OF THE URINE
   Renal function tests
      1. Creatinine clearance
      2. Osmolality
   Tests for metabolic disease
      1. Phenylalanine
      2. Homogentisic acid
      3. Branched chain amino acids
   Correlation of results with disease
BODY FLUID ANALYSIS

Cerebrospinal fluid
1. Cell counts
2. Protein
3. Glucose
4. Correlation of results with disease

Synovial fluid
1. Mucin clot test
2. Cell counts
3. Protein
4. Crystal analysis
5. Correlation of results with disease

Serous fluids
1. Cell counts
2. Protein
3. LDH
4. pH
5. amylase
6. Correlation of results with disease

Amniotic fluid
1. Lipoproteins
2. Bilirubin
3. Correlation of results with disease

Seminal fluid
1. Sperm counts
2. Motility
3. Viability
4. Correlation of results with disease

Sweat analysis
1. Sweat electrolytes
2. Correlation of results with disease

Fecal analysis
1. Fecal WBC
2. Occult blood
3. Fecal fats
4. Correlation of results with disease
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<td>Kidney / nephron review</td>
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