

CLS 405: Clinical Chemistry

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COURSE DESCRIPTION:

CLS 405. Clinical Chemistry (5 cr.)

Study physiology of body analytes, organ systems, and clinical procedures corresponding to human disease states; discuss areas unique to clinical chemistry laboratory and professional performance. 3 hrs. lec., 3 hrs. lab per wk.

PREREQUISITES:

Chemistry 365 or con reg.

LEARNING OUTCOMES

Students will be able to:

1. Identify reference ranges and critical values for common clinical chemistry tests.
2. Determine appropriate responses to critical values
3. Discuss the basic principles for analytical procedures for commonly determined analytes.
4. Utilize quality control principles to determine acceptability of laboratory tests.
5. Identify principle components for laboratory instruments.
6. Define the basic chemical reactions for analytes.
7. Discuss the purpose for performing common chemistry tests, appropriately interpreting high and low values as related to corresponding organ function.
8. Correlate laboratory data to disease states.
9. Complete projects successfully as a member of the class, as a member of a group, and as an individual.

COURSE OBJECTIVES:

Objectives are provided with each unit.

FORMAT:

As a means of enhancing your learning experience, this course will be organized in a hybrid format for the lecture. Throughout the semester, you will have the opportunity to work individually and in groups to complete assignments, post your results, and then respond to other groups. This process will provide more experience in critically analyzing laboratory data and correlating that data to disease processes.

The hybrid format gives you greater flexibility and control of your time.

DISCUSSION: A scheduled one-hour discussion will review lecture materials, answer questions, review exams, review for an exam, discuss case studies, or may include independent study.

LABORATORY: Lab exercises will be assigned.

ASSIGNMENTS: (MAY INCLUDE ANY OF THE FOLLOWING):

Online Quizzes: Online quizzes may accompany class and group work. These *timed* quizzes are to be *completed individually*.

Case Studies: Case studies will be worked on in lecture, discussion, or as part of an exam review.

Pre-clinical Competencies: Working in your assigned group,

- a. complete a series of objective pre-clinical competencies.
- b. post this assignment to Canvas
- c. respond to other group's assignment.
- d. discuss your assignment in class and react to responses received.

Instrumentation – Topic Paper and Presentation: (if assigned) For the instrument assigned,

- a. provide a diagram of basic components.
- b. discuss the basic components.
- c. explain the principles of operation.
- d. identify the chemical reactants and end products.
- e. review how measurements are determined.
- f. identify tests performed and purposes for the test.
- g. indicate reference ranges and critical values.
- h. prepare and post your presentation to Canvas.
- i. prepare final presentation using the responses from another group and the instructor as a guide.
- j. present and discuss your topic with the class on the assigned date. Computer projection, network access, and an overhead are available tools for presentations. PowerPoint is recommended.

Missed/Late Work Policy

Missed/late work (assignments, projects, exams, etc.) will receive a zero if not completed by the scheduled due dates or scheduled exam periods unless the student provides the instructor with a doctor's note, coaches note, obituary, etc., as deemed appropriate by the instructor. *Students with proper documentation will be given no more than 72 hours, from the date of the document, to complete all missed work. Any extra time beyond 72 hours will need to be pre-arranged, with proper documentation, with the Instructor. It should not be assumed that time beyond 72 hours will be granted.* It is the student's responsibility to provide the instructor with the documentation and schedule make-up exams and /or submit late assignments, etc. within the 72 hour time-frame; failure to do so will result in a zero.

Note: Having to work is not an acceptable reason for missing class and the absence will be

deemed unexcused, and result in a zero for any missed schoolwork.

REQUIRED PROFESSIONAL ACTIVITIES: As a professional, continuing education and membership in the professional organization are essential. It is highly recommended that you become a student member of the American Society for Clinical Laboratory Science (ASCLS).

WISCLS State Symposium: Attendance Required.

Place: Middleton WI

Dates: Wednesday, April 20, 2022 and Thursday, April 21, 2022

The program will be distributed when it becomes available.

Annual Student Presentation Day: Attendance Required.

Place: More information to come.

Date: Monday, March 7, 2022

EXAMS & QUIZZES:

1. Case studies.
2. Online quizzes.
3. Five 1-hour exams.
4. Comprehensive final exam.

GRADING SYSTEM:

Letter Grade	Percentage
A	93.0-100%
A-	90.0-92.9%
B+	87.0-89.9%
B	83.0-86.9%
B-	80.0-82.9%
C+	77.0-79.9%
C	73.0-76.9%
C-	70.0-72.9%
D+	67.0-69.9%
D	60.0-66.9%
F	0-59.9%

DERIVATION OF COURSE GRADES:

Lecture = 50% (may include the following items or additional items)

Case Studies

Online Quizzes

Hour Exams

Student Presentation Day

WISCLS Symposium

Laboratory Exercises = 30%

Assigned Exercises
Preclinical Competencies
Instrumentation Paper and Presentation
Final Examination = 20%

REQUIRED TEXTS:

Clinical Chemistry: Principles, Techniques, and Correlations, 8th edition.
Authors: M. L. Bishop, E. P. Fody, L. E. Schoeff

REFERENCE TEXTS:

Clinical Chemistry: A Laboratory Perspective

Authors: W. Arneson and J. Brickell

Clinical Chemistry: Theory, Analysis, Correlation

Authors: L. A. Kaplan, A. J. Pesce, S. C. Kazmierczak

Supplemental texts and journal articles will be used as needed.