

McLennan C O M M U N I T Y C O L L E G E

WACO, TEXAS

COURSE SYLLABUS

AND

INSTRUCTOR PLAN

Clinical Chemistry

MLAB 2401.01

Alisa J. Petree, MHSM, MLS (ASCP)^{cm}

NOTE: This is a 16-week course.

COVID 19 Notice:

McLennan Community College is committed to providing you with every resource you need to reach your academic goals including your safety. We will continue to monitor the evolving situation with COVID 19 and adjust our safety guidelines to make sure we offer a safe environment for you and our faculty. Please make sure to consult your faculty and the MCC website at <https://www.mclennan.edu/crisis-management/coronavirus-updates/index.html> on any changes to these guidelines.

AN EQUAL OPPORTUNITY INSTITUTION

Spring 2022

Course Description:

Introduces the principles and procedures of various tests performed in clinical chemistry. Presents the physiological basis for the test, the principle and procedures for the test, and the clinical significance of the test results, including quality control and normal values. Also includes basic chemical laboratory techniques, chemical laboratory safety, electrolytes and acid-base balance, proteins, carbohydrates, lipids, enzymes, metabolites, endocrine function, and toxicology. Utilizes a student laboratory for experiences in basic clinical chemistry procedures.

Prerequisites and/or Corequisites:

Prerequisites: Admission to the medical laboratory technician program and approval by the program director. Semester Hours 4 (3 lec/3 lab)

Course Notes and Instructor Recommendations:

- ✦ Have your textbook by the first day of class
- ✦ Estimated study time outside of class: 10-12 hours per week
- ✦ Check your student email daily
- ✦ Use computer with reliable internet access

Please note:

It is MCC's policy to assign all students, upon registration, an official e-mail address, which may remain in effect up to twelve months after students are no longer enrolled at MCC. MCC student e-mail addresses will be the only e-mail authorized to communicate official college information or business. A student's failure to receive or read official communications sent to the student's assigned e-mail address in a timely manner does not absolve the student from knowing and complying with the content of the official communication.

Students **must** have access to a computer with reliable Internet access to participate in this class. McLennan Community College now provides students, faculty & staff the ability to sign up for and download Microsoft Office 365, **for free!** Students should also download *Adobe Reader* to open any PDF files in the course (free download).

Instructor Information:

Instructor Name: Alisa Petree, MHSM, MLS (ASCP)^{cm},

Program Director/Professor

MCC E-mail: apetree@mclennan.edu

Office Phone Number: 254-299-8406

Office Location: SB 320

Office/Teacher Conference Hours: Monday, Wednesday 9-11:30 AM

Tuesday/Thursday 9-10 AM, Other times by appointment

Required Text & Materials:

Title: Clinical Chemistry Fundamentals and Laboratory Techniques

Author: Donna Larson, EdD, MT(ASCP)DLM

Edition: 1

Publisher: Elsevier

ISBN: 9781455742141

E-ISBN 9780323292535

MCC Bookstore Website: <http://www.mclennan.edu/bookstore/>

Supply List

1. MCC MLT scrubs with MCC arm patch
2. Long white lab coat with MCC arm patch
3. Closed-toe walking shoes and appropriate socks
4. Name badge supplied by college
5. Watch/timing device with a second hand
6. Sharpie or permanent marker
7. Black ink pen
8. Binder or notebook

Methods of Teaching and Learning:

MLAB 2401 students will be taught by the use of various learning methods and activities, to include lectures, case studies, demonstrations, laboratory exercises, Internet applications, streaming video, individualized projects, self-paced worksheets, web-sites and other resources will be utilized for research and projects. Course materials will be available on *D2L Brightspace* for student access during the course. Emphasis is on routine and special chemistry procedures and interpretation of test results in relationship to laboratory test results. Learning outcomes or specific course objectives are provided in each learning unit.

Course Objectives and/or Competencies:

MLAB 2401 is designed to prepare students to function at an entry-level position in a routine clinical chemistry laboratory. Lectures, demonstrations, laboratory sessions, clinical experiences, Internet exercises, and case studies will be used during the course. Emphasis will be placed on normal human physiology as it relates to clinical chemistry and disease states of the body. Emphasis will also be placed on routine clinical chemistry instrumentation and Quality Control methods. Routine chemistry procedures will be examined and abnormal chemistry results will be studied in relationship to the disorders of human physiology. The student will evaluate laboratory test outcomes and correlate test results with patient conditions and evaluate the suitability of clinical specimens. The student will demonstrate an understanding of clinical chemistry; describe disease states associated with abnormal chemistry values; and perform basic laboratory chemical analysis by scoring a grade of 75 or better in the class.

After completion of MLAB 2401 Clinical Chemistry the student should be able to meet the following general course objectives:

1. Collect, process, and analyze medical clinical chemistry specimens.
2. Recognize and apply principles related to the use of laboratory information systems used in the clinical chemistry department.
3. Perform analytical tests on body fluids, serum, plasma, and other substances tested in the department.
4. Recognize factors that affect methods and test results and take appropriate actions within established guidelines using the skills of critical thinking and problem solving.
5. Recognize the clinical significance of laboratory procedures in the diagnosis and treatment of disease.
6. Perform and monitor routine departmental quality control within established guidelines by applying the principles of critical thinking and problem solving.
7. Perform preventive and corrective maintenance of equipment and instruments and refer to appropriate sources as necessary.
8. Apply and encourage the use of the principles of laboratory safety, including Standard Precautions.
9. Demonstrate professional conduct and interpersonal communication skills with patients, laboratory personnel, other health care professionals, and with the public.
10. Recognize the responsibilities of other laboratory and health care personnel and interact appropriately with them for quality patient care.
11. Apply basic scientific principles in learning new techniques and procedures.
12. Relate laboratory test results to common disease processes by recognizing the principles and methodologies practiced in the department.
13. Establish and maintain continuing education as a function of growth and maintenance of personal and professional competence.

All cognitive, psychomotor and affective domain objectives reflect these competencies. The affective domain objectives help the student understand the importance of professionalism, responsibility, and other "soft skills" associated with job competency.

Clinical Chemistry

MLAB 2401.01

Course Outline or Schedule:

Week	Dates			Lecture Topic	Chapter	Lab	Assignment
1	Jan	10	M	Introduction to Clinical Chemistry	1		MTS - Specimen Processing
		12	W	Laboratory Safety	2	Lab 1 : Pipetting	LU 1 Quiz
2		17	M	Holiday - No class			MTS - Introduction to Molecular Techniques
		19	W	Principles of Laboratory Instrumentation	3	Lab 2: Pointe 180 assay	LU 2 Quiz
3		24	M	Immunoassays	4		MTS - Laboratory Methods Immunoassays
		26	W	Molecular Diagnostics	5	Lab 3: Mini-PCR - Missy Baker	LU 3 Quiz
4	Jan	31	M	Automation in the Laboratory	6		MTS - Intro to Analytic Quality Assurance
	Feb	2	W	Laboratory Quality Management Systems	7	Lab 4: Westgard Website/QC BS 200	LU 4 Quiz
5		7	M	Exam 1 - Chapters 1-7; Start Chapter 8	8`		Enzyme Assignment
		9	W	Enzymes/Clinical Chemistry and Disease	8,9	Lab 5: Enzyme - AST/ALT	LU 5 Quiz
6		14	M	Cell Injury and Its Relationship to Disease and Inflammation	10,11		Electrolytes Assignment
		16	W	Body Fluids and Electrolytes	12	Lab 6: Chloride	LU 6 Quiz
7		21	M	Blood Gases and Acid Base Balance	13		Acid-Base Assignment
		23	W	Exam 2 Chapters 8-13		Lab 7: BUN/Creatinine	LU 7 Quiz
8	Feb	28	M	Blood Diseases, Proteins	14,15		MTS - Protein Electrophoresis
	Mar March 6-12	2	W	Cancer and Tumor Markers	16	Lab 8: Total Protein/Albumin	LU 8Quiz
9				Spring Break			
		14	M	Blood Vessel Diseases and Heart Disease	17,18		Lipids Assignment
10		16	W	Blood Vessel Diseases and Heart Disease	17,18	Lab 9: Cholesterol	LU 9 Quiz
		21	M	Respiratory Diseases	19		Liver Assignment
11		23	W	GI and Liver Diseases	20,21	Lab 10: Total Bilirubin	LU 10 Quiz
		28	M	Pancreatic Diseases and Disorders	22		Carbohydrate Assignment
12		30	W	Endocrinology	23	Lab 11: Glucose	LU 11 Quiz
		4	M	Endocrinology (con't)	23		Endocrine/Reproductive Assignment
13		6	W	Reproductive Diseases and Disorders and Pregnancy	25,26	Lab 12: bHCG	LU 12 Quiz
		11	M	Exam 3 Chapters 17-23			Bone and Muscle Disease Assignment
14		13	W	Bone, Joint and Skeletal Muscle Diseases	27	Lab 13: Calcium	LU 13 Quiz
		18	M	Nervous System Diseases			Nervous System Assignment
15		20	W	Therapeutic Drug Monitoring		Lab 14: Screening Drugs of Abuse	LU 14 Quiz
		25	M	Toxicology			TDM/Toxicology Assignment
16	May	27	W	Exam 4 Chapters 25,26,27,28,33,34			
		Final Exam		Wednesday 1:00 PM - 3:00 PM		See Finals Schedule	

Course Grading Information:

1. Grading Policy

A= 90 – 100

B= 80 - 89

C= 75 - 79

D= 70 – 74

F = 69 and below

Any student earning a 74 or below on any paper is required to schedule conference time with the Program Director.

2. Course Breakdown

45% Examinations

15% Final Examination

40% Lab Exercises, Quizzes and Assignments

100%

Grades will be posted on *D2L Brightspace*.

3. Examinations

There are four major examinations plus the final exam. The final is comprehensive. Exams are administered using *D2L Brightspace*. There are no make-up exams. If you miss an exam, your final exam grade will also serve as the grade for the missed exam. **ALL tests will be proctored.**

4. Lab Exercises

Being competent in the laboratory is critical for the MLT. Therefore, it is crucial that each student be present and able to complete his/her lab assignments. Practical lab exams are given to determine competency. Many lab exercises/assignments may not be available to makeup due to reagent limitations or preparation.

5. Assignments

Your assignment grade may include quizzes, projects, worksheets, and homework.

Late Work, Attendance, and Make Up Work Policies:

Regular and punctual attendance is expected of all students, and each instructor will maintain a complete record of attendance for the entire length of each course. Students will be counted absent from class meetings missed, beginning with the first official day of classes. Students, whether present or absent, are responsible for **all** material presented or assigned for a course and will be held accountable for such materials in the determination of course grades.

Absence from **6** scheduled class days (excused or unexcused), will result in the student being withdrawn from the course. If the student's 6th absence is reached after the official drop date, the instructor may assign a W if the student is passing and requests to be withdrawn. However, if a student who is not passing reaches the 6th absence after the official drop date, the student will receive an F. In extenuating circumstances, the instructor may assign a W to a student who is not passing. Each absence (whether excused or unexcused) will count toward attendance requirements in each course.

Make-up Work: Students are responsible for all material presented or assigned in class and Lab. Students will be held accountable for such materials in the determination of course grades. If a student misses an **EXAM or LAB COMPETENCY**, the student **must provide** 1) proof of illness, 2) illness of a family member for whom the student is a caretaker (e.g., single parent) or death in the family, 3) religious holy day or 4) approved college activity and make up missed exam or Lab competency within one week following the Exam date or Lab Competency date.

The final exam grade will substitute for any missed exam due to an excused absence. Lab competency will be made up during the student's Lab time. If a student fails to follow these instructions for making up a Lab competency, the student will receive a zero (0%) or **UNSATISFACTORY** for the Lab competency.

Note: The instructor has the prerogative of determining whether a student may make up work missed due to absences for other reasons. It is the student's responsibility to inform the instructor of the reason for an absence and to do so in a timely fashion.

Students are expected to be in class, on time. For security reasons, the doors to the classroom and Lab will be locked from the outside and the doors will remain locked after class starts. If the student cannot be in the classroom or Lab by the time class starts, the student will be able to come in during the scheduled break. If the student must leave the classroom or Lab for an emergency, the student will quietly pick up course materials and leave the classroom or Lab. Since the doors are locked from the outside, the student will not be able to come back into the class or Lab until the scheduled break. The students' cooperation is appreciated.

Lab absences – will be monitored the same as above. **Leaving early will also be counted as an absence.**

Student Absences on Religious Holy Days

McLennan Community College shall excuse a student from attending classes or other required activities including examinations for the observance of a religious holy day, including travel for that purpose. Students are required to file a written request with each instructor for an excused absence. A student whose absence is excused for this observance may not be penalized for that absence and shall be allowed to take an examination or complete an assignment from which the student is excused within a reasonable time after the absence. Religious holy day means a holy day observed by a religion whose places of worship are exempt from property taxation under the Texas Tax Code.

McLennan Community College may not excuse absences for religious holy days which may interfere with patient care.

Student Behavioral Expectations or Conduct Policy:

Students are expected to maintain classroom decorum that includes respect for other students and the instructor, prompt and regular attendance, and an attitude that seeks to take full advantage of the education opportunity.

Dress Code

The student classroom/laboratory is a level 2 biohazard lab. Therefore, students will be required to wear scrubs (preferably the MLT scrubs) and closed toe shoes to class and lab. We are representing our profession and our program. Please see the MLT Student Handbook for more information.

[Click Here for the MCC Attendance/Absences Policy](https://www.mclennan.edu/highlander-guide/policies.html)

(<https://www.mclennan.edu/highlander-guide/policies.html>)

Click on the link above for the college policies on attendance and absences. Your instructor may have additional guidelines specific to this course.

McLennan

C O M M U N I T Y

COLLEGE

ACADEMIC RESOURCES/POLICIES

Accommodations/ADA Statement:

Any student who is a qualified individual with a disability may request reasonable accommodations to assist with providing equal access to educational opportunities. Students should contact the Accommodations Coordinator as soon as possible to provide documentation and make necessary arrangements. Once that process is completed, appropriate verification will be provided to the student and instructor. Please note that instructors are not required to provide classroom accommodations to students until appropriate verification has been provided by the Accommodations Coordinator. For additional information, please visit www.mclennan.edu/disability.

Students with questions or who require assistance with disabilities involving physical, classroom, or testing accommodations should contact:

disabilities@mclennan.edu

254-299-8122

Room 319, Student Services Center

Title IX:

We care about your safety, and value an environment where students and instructors can successfully teach and learn together. If you or someone you know experiences unwelcomed behavior, we are here to help. Individuals who would like to report an incident of sexual misconduct are encouraged to immediately contact the Title IX Coordinator at titleix@mclennan.edu or by calling Dr. Drew Canham (Chief of Staff for Diversity, Equity & Inclusion/Title IX) at (254) 299-8645. Individuals also may contact the MCC Police Department at 299-8911 or the MCC Student Counseling Center at MCC at (254) 299-8210. The MCC Student Counseling Center is a confidential resource for students. Any student or employee may report sexual harassment anonymously by visiting <http://www.lighthouse-services.com/mclennan/>.

Go to McLennan's Title IX webpage at www.mclennan.edu/titleix/. It contains more information about definitions, reporting, confidentiality, resources, and what to do if you or someone you know is a victim of sexual misconduct, gender-based violence or the crimes of rape, acquaintance rape, sexual assault, sexual harassment, stalking, dating violence, or domestic violence.

Student Support/Resources:

MCC provides a variety of services to support student success in the classroom and in your academic pursuits to include counseling, tutors, technology help desk, advising, financial aid, etc. A listing of these and the many other services available to our students is available at <http://www.mclennan.edu/campus-resource-guide/>

College personnel recognize that food, housing, and transportation are essential for student success. If you are having trouble securing these resources or want to explore strategies for balancing life and school, we encourage you to contact a Success Coach by calling (254) 299-8226 or emailing SuccessCoach@mclennan.edu. Students may visit the Completion Center Monday-Friday from 8 a.m.-5 p.m. to schedule a meeting with a Success Coach and receive additional resources and support to help reach academic and personal goals. Paulanne's Pantry (MCC's food pantry) provides free food by appointment to students, faculty and staff based on household size. Text (254) 870-7573 to schedule a pantry appointment. The Completion Center and pantry are located on the Second Floor of the Student Services Center (SSC).

MCC Foundation Emergency Grant Fund:

Unanticipated expenses, such as car repairs, medical bills, housing, or job loss can affect us all. Should an unexpected expense arise, the MCC Foundation has an emergency grant fund that may be able to assist you. Please go to <https://www.mclennan.edu/foundation/scholarships-and-resources/emergencygrant.html> to find out more about the emergency grant. The application can be found at https://www.mclennan.edu/foundation/docs/Emergency_Grant_Application.pdf.

MCC Academic Integrity Statement:

Go to www.mclennan.edu/academic-integrity for information about academic integrity, dishonesty, and cheating.

Minimum System Requirements to Utilize MCC's D2L|Brightspace:

Go to <https://www.mclennan.edu/center-for-teaching-and-learning/Faculty-and-Staff-Commons/requirements.html> for information on the minimum system requirements needed to reliably access your courses in MCC's D2L|Brightspace learning management system.

Minimum Technical Skills:

Students should have basic computer skills, knowledge of word processing software, and a basic understanding of how to use search engines and common web browsers.

Backup Plan for Technology:

In the event MCC's technology systems are down, you will be notified via your MCC student email address. Please note that all assignments and activities will be due on the date specified in the Instructor Plan, unless otherwise noted by the instructor.

Email Policy:

McLennan Community College would like to remind you of the policy (<http://www.mclennan.edu/employees/policy-manual/docs/E-XXXI-B.pdf>) regarding college email. All students, faculty, and staff are encouraged to use their McLennan email addresses when conducting college business.

A student's McLennan email address is the preferred email address that college employees should use for official college information or business. Students are expected to read and, if needed, respond in a timely manner to college emails.

Instructional Uses of Email:

Faculty members can determine classroom use of email or electronic communications. Faculty should expect and encourage students to check the college email on a regular basis. Faculty should inform students in the course syllabus if another communication method is to be used and of any special or unusual expectations for electronic communications.

If a faculty member prefers not to communicate by email with their students, it should be reflected in the course syllabus and information should be provided for the preferred form of communication.

Email on Mobile Devices:

The College recommends that you set up your mobile device to receive McLennan emails. If you need assistance with set-up, you may email Helpdesk@mclennan.edu for help.

Forwarding Emails:

You may forward emails that come to your McLennan address to alternate email addresses; however, the College will not be held responsible for emails forwarded to an alternate address that may be lost or placed in junk or spam filters.

Disclaimer:

The resources and policies listed above are merely for informational purposes and are subject to change without notice or obligation. The College reserves the right to change policies and other requirements in compliance with State and Federal laws. The provisions of this document do not constitute a contract.