



The University of Texas at El Paso  
College of Health Sciences  
Clinical Laboratory Science Program



CLSC 3354: Clinical Chemistry I  
Syllabus  
Fall 2022

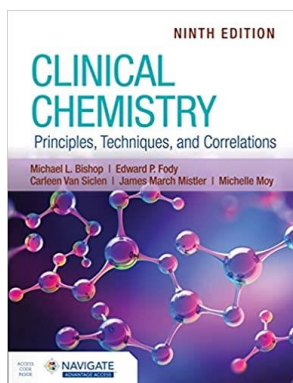
## I. Course Information

**Days:** Tuesday and Thursday

**Time:** 11:00am – 12:20pm

**Room:** College of Health Sciences (CHS) 211

**Textbook:** Bishop, Michael L., Fody, Edward P., Van Sclen, Carleen, Mistler, James M., Moy, Michelle. 2023. *Clinical Chemistry. Principles, Techniques and Correlations. 9<sup>th</sup> Edition.* Jones & Bartlett Learning.



## II. Instructor Information

**Instructor:** Nancy D. Cruz-Sanchez, MS, MLS (ASCP)<sup>CM</sup>

**Email:** ndcruzsanch@utep.edu

**Office:** College of Health Sciences (CHS) 426

**Office Phone Number:** 915-747-7243

**Office Hours:** BY APPOINTMENT

Monday and Wednesday: 1:00pm – 4:00pm

Friday: 11:00am – 2:00pm

- **In order to better assist you, please make sure you schedule an appointment. If you can't schedule during these times, please contact me (after class/lab or via email) to schedule another time.**
  - **Multiple students may be scheduled for the same office hour session.**
  - **If it is a private matter, you wish to discuss material or have questions and prefer to have a private office hour or online session, please make sure to notify the instructor when appointment is being made.**

- **Online meetings may be scheduled (Zoom, Teams).**
- **Students must use their UTEP email when communicating, for appointments, questions, etc.**
  - o **Emails received:**
    - **Monday through Thursday after 5:00pm will be replied to the next day.**
    - **Friday after 4:00pm will be replied Monday (or next business day if it is a holiday).**
    - **Saturday and/or Sunday will be replied Monday (or next business day if it is a holiday).**
    - **Holidays will be replied to the next business day.**
- **Instructor is also available after class/lab (unless another class is on her schedule).**
- **If instructor is not in her office, she may be in CHS 137 Laboratory Prep Room preparing for laboratories. Students may attend office hours in prep room with instructor.**

### **III. Course Description**

This course is designed for students in the clinical laboratory science program. It intends to provide clinical chemistry theory, principles and foundations, and focusses in the discussion of clinical chemistry topics like analytical techniques, instrumentation and physiological-biochemical theory and principles of analytes tested in the clinical chemistry laboratory department for appropriate application in the clinical laboratory setting. It also intends to discuss the relationship of such analytes, to distinguish between normal and abnormal results and aid in the evaluation and analysis of the results using patient's clinical history and evidence. Topics to be discussed include but are not limited to: plasma proteins, enzymes, carbohydrates, lipids, lipoproteins and non-nitrogen compounds.

Course co-requisite: CLSC 3155: Clinical Chemistry I Laboratory

Course pre-requisite: CHEM 1305, CHEM 1105, CHEM 1306, CHEM 1106, CHEM 2324 and CHEM 2124 (Each with a grade of "C" or higher and department approval.)

### **IV. Course Goal**

This course intends to provide the student with clinical chemistry foundations, principles and theory regarding analytes tested in the clinical chemistry laboratory, their physiological-biochemical purpose, pathways, and an understanding of the analytical techniques used to determine analyte presence and/or concentration in a specimen. Likewise, the student will learn to accurately distinguish between abnormal and normal results and, will evaluate and analyze such results using patient clinical history and evidence.

## V. Course Objectives

### A. Cognitive

Upon completion of this course the student will be able to do the following accordingly to each chapter:

1. Chapter 4: Analytic Techniques
  - a. Explain the general principles of each analytic method.
  - b. Discuss the limitations of each analytic technique.
  - c. Compare and contrast the various analytic techniques.
  - d. State existing clinical applications for each analytic technique.
  - e. Describe the operation and component parts of the following instruments:
    - Spectrophotometer
    - Atomic absorption spectrometer
    - Fluorometer
    - Osmometer
    - Ion-selective electrode
    - pH electrode
    - Gas chromatograph
    - Mass spectrometer
  - f. Outline spectrophotometer quality assurance procedures.
2. Chapter 5: Clinical Chemistry Automation
  - a. State the components of total laboratory automation.
  - b. Define the following terms:
    - Continuous flow
    - Discrete analysis
    - Random access
    - Throughput
  - c. Name three basic approaches to sample analysis used by automated analyzers.
  - d. Explain the major steps in automated analysis.
  - e. Provide examples of commercially available chemistry analyzers and modular systems.
  - f. Contrast the different automated analysis platforms used by instrument manufacturers.
  - g. Differentiate between an open versus a closed reagent system.
  - h. Differentiate between turbidimetry and nephelometry.
  - i. Compare and contrast the type of labels used in immunoassays.
  - j. Diagram competitive immunoassays and non-competitive immunoassays.
  - k. Discuss the benefit of using paramagnetic particles in automated immunoassay systems.

- l. List examples of interfering substances in immunoassays.
3. Chapter 6: Proteins and Heme Derivatives
  - a. Define key terms associated with amino acids, proteins, and heme derivatives.
  - b. Describe the basic structure and general properties of amino acids.
  - c. Differentiate between essential, conditionally essential, and non-essential amino acids used in protein synthesis.
  - d. Outline the basic structure, functions, and classifications of proteins.
  - e. Explain the processes involved in metabolism, synthesis, and degradation of proteins.
  - f. Diagram the process involved in heme synthesis.
  - g. Discuss the function and clinical significance of proteins and heme derivatives commonly measured in serum, plasma, urine, cerebrospinal fluid, and other body fluids.
  - h. Specify the specimen requirements and common test methods used in the quantitative analysis of proteins and heme derivatives.
  - i. State reference ranges for serum or plasma total protein and albumin.
  - j. Discuss pathologic and non-pathologic factors that influence total protein and albumin concentrations.
  - k. Identify the fractions of a serum protein electrophoresis and list proteins expected to migrate to each.
  - l. Correlate patient results with associated disease states, disorders, or pre-analytic issues.
4. Chapter 7: Non-Protein Nitrogen Compounds
  - a. List the non-protein nitrogen components of the blood, their relative physiologic concentrations, and recognize their chemical structures.
  - b. Describe the biosynthesis and excretion of urea, uric acid, creatinine, creatine, and ammonia.
  - c. State the specimen collection, transport, and storage requirements necessary for determinations of urea, uric acid, creatinine, creatine, and ammonia.
  - d. Discuss the methodology for the determination of urea, uric acid, creatinine, creatine, and ammonia in plasma and urine. Identify the source of error and variability in these methods and describe the effects on the clinical utility of the laboratory measurements.

- e. State the reference ranges for urea, uric acid, creatinine, and ammonia in plasma and urine. State the effects of age and gender in these values.
- f. Perform calculations to convert laboratory results between systems of measurement.
- g. Describe the major pathological conditions associated with increased and decreased plasma concentrations of urea, uric acid, creatinine, creatine, and ammonia.
- h. Describe the use of the urea nitrogen/creatinine ratio to distinguish prerenal, renal, and postrenal causes of uremia.
- i. Relate the solubility of uric acid to the pathologic consequences of increased plasma uric acid.
- j. Explain the use and limitations of serum creatinine for calculations of estimated glomerular filtration rate.
- k. Describe the toxic effects related to an increased plasma ammonia concentration.
- l. Suggest possible clinical conditions associated with test results, given patient values for urea, uric acid, creatinine, and ammonia, and supporting clinical history.

#### 5. Chapter 8: Enzymes

- a. Define the term enzyme, including physical composition and structure.
- b. Classify enzymes according to the International Union of Biochemistry.
- c. List the different factors affecting the rate of an enzymatic reaction.
- d. Diagram enzyme kinetics, including zero-order and first-order kinetics.
- e. Explain why the measurement of plasma enzyme concentrations is clinically useful.
- f. Differentiate which enzymes are useful in the diagnosis of various disorders, including cardiac, hepatic, bone, and muscle malignancies, and acute pancreatitis.
- g. Discuss the tissue sources, diagnostic significance, clinical assays, and the sources of error for the following enzymes:
  - Creatine kinase
  - Lactate dehydrogenase
  - Aspartate aminotransferase
  - Alanine aminotransferase
  - Alkaline phosphatase
  - Acid phosphatase
  - $\gamma$ -glutamyltransferase
  - 5'-nucleotidase
  - Amylase

- Lipase
    - Glucose-6-phosphate dehydrogenase.
  - h. Evaluate patient plasma enzyme concentrations in relation to disease states.
  - i. State the clinical importance for detecting macroenzymes.
  - j. Specify the role of enzymes in drug metabolism.
6. Chapter 9: Carbohydrates
- a. Classify carbohydrates into their respective groups.
  - b. Discuss the metabolism of carbohydrates in the body and the mode of action of hormones in carbohydrate metabolism.
  - c. Differentiate the types of diabetes by clinical symptoms and laboratory findings according to the American Diabetes Association.
  - d. Explain the clinical significance of the three ketone bodies.
  - e. Relate expected laboratory results and clinical symptoms to the following metabolic complications of diabetes:
    - Ketoacidosis
    - Hyperosmolar coma
  - f. Distinguish between reactive and spontaneous hypoglycemia.
  - g. State the principle, specimen of choice, and the advantages and disadvantages of the glucose analysis methods.
  - h. List the three commonly encountered methods of glycosylated hemoglobin, specimen of choice, and source of error.
  - i. Interpret glycosylated hemoglobin values used for long-term monitoring of diabetes.
  - j. Specify the methods of analysis and the advantages and disadvantages of ketone bodies.
7. Chapter 10: Lipids and Lipoproteins
- a. Explain lipoprotein physiology and metabolism.
  - b. Describe the structure of fatty acids, phospholipids, triglycerides, cholesterol, and the various types of lipoprotein particles discussed.
  - c. State the laboratory tests used to assess lipids and lipoproteins, including principles and procedures.
  - d. Correlate common lipid disorders with clinical and laboratory data.
  - e. Discuss the incidence and types of lipid and lipoprotein abnormalities.
  - f. Identify the reference ranges for the major serum lipids.
  - g. Interpret the clinical significance of lipid and lipoprotein values in the assessment of coronary heart disease.

- h. Illustrate the role of standardization in the measurement of lipids and lipoproteins.
8. Chapter 11: Electrolytes
- a. Define electrolyte, osmolality, anion gap, anion, and cation.
  - b. Describe the physiology of each electrolyte described in the chapter.
  - c. State the clinical significance of each of the electrolytes.
  - d. Calculate osmolality, osmolal gap, and anion gap and discuss the clinical usefulness of each.
  - e. Discuss the analytic techniques used to assess electrolyte concentrations.
  - f. Correlate the information with disease state, given patient data.
  - g. Identify the reference ranges for sodium, potassium, chloride, bicarbonate, magnesium, and calcium.
  - h. State the specimen of choice for the major electrolytes.
  - i. Explain the role of the kidney in electrolyte excretion and conservation.
  - j. Discuss the usefulness of urine electrolyte results: sodium, potassium, calcium, and osmolality.
9. Chapter 12: Blood Gases, pH and Buffer Systems
- a. Describe the chemical and physiological systems involved in acid-base balance, including the bicarbonate, phosphate, protein, and hemoglobin buffer systems along with the role of the kidneys and lungs.
  - b. Use the Henderson-Hasselbalch equation to predict the pH or bicarbonate of a patient sample when given appropriate data.
  - c. Define and describe the four major states of acid-base imbalance.
  - d. Identify common causes of metabolic acidosis, metabolic alkalosis, respiratory acidosis, and respiratory alkalosis.
  - e. Explain compensation mechanisms or acid-base imbalances including renal Na-H exchange,  $\text{HCO}_3^-$  reabsorption,  $\text{NH}_4^+$  formation, and  $\text{H}_2\text{PO}_4$  formation.
  - f. Given laboratory data, use the Henderson-Hasselbalch equation to determine the acid-base disorder including uncompensated or compensated conditions.
  - g. Describe oxygen transport and identify mechanisms by which oxygen status is assessed in patients.
  - h. Draw the hemoglobin-oxygen dissociation curve and the impact that pH,  $p\text{CO}_2$ , 2,3-diphosphoglycerate (2,3-DPG) (also referred to as 2,3-biphosphoglycerate (2,3-BPG)), and temperature have on its shape and release of oxygen.

- i. Describe the principles involved in the measurement of pH,  $p\text{CO}_2$ ,  $p\text{O}_2$ , and the various hemoglobin species.
- j. Explain the clinical significance of the following pH and blood gas parameters:
  - pH
  - $p\text{CO}_2$
  - $p\text{O}_2$
  - Actual bicarbonate
  - Carbonic acid
  - Base excess
  - Oxygen saturation
  - Fractional oxyhemoglobin
  - Hemoglobin oxygen (binding) capacity
  - Oxygen content
  - Total  $\text{CO}_2$
- k. Discuss problems and precautions in collecting and handling samples for pH and blood gas analysis. Include syringes, anticoagulants, mixing, icing, and capillary and venous samples as well as arterial samples in the discussion.
- l. Describe instrumental approaches to measuring various hemoglobin species and pH and blood gas parameters.
- m. Describe approaches to quality assurance, including quality control and proficiency testing to assess analytic quality.
- n. Discuss the reasons for possible discrepancies, given oxygen saturation data calculated by the blood gas analyzer and measured by the CO-oximeter.

#### 10. Chapter 25: Therapeutic Drug Monitoring

- a. Discuss drug characteristics that make therapeutic drug monitoring essential.
- b. Identify factor that influence the absorption of an orally administered drug.
- c. List factors that influence the rate of drug elimination.
- d. Define drug distribution and discuss factors that influence it.
- e. Calculate volume distribution, elimination constant, and drug half-life.
- f. Correlate drug concentrations to pharmacokinetic and pharmacodynamic parameters.
- g. State specimen collection and handling requirements for therapeutic drug monitoring.
- h. Specify the therapeutic category or use of each drug presented in this chapter.
- i. Describe potential toxic side effects/toxicity of the therapeutic drugs discussed.



- j. Apply knowledge of therapeutic drug monitoring to interpret laboratory results.

#### 11. Chapter 26: Toxicology

- a. Identify the routes for toxin exposure and factors influencing absorption including dose.
- b. Distinguish between acute and chronic toxicity.
- c. List the major toxicants discussed.
- d. Explain the pathologic mechanisms of the major toxicants.
- e. Compare and contrast specimen types, including advantages and disadvantages of each.
- f. Discuss specimen collection, handling, and processing for toxicology testing.
- g. Differentiate between quantitative and qualitative tests in toxicology.

#### 12. Chapter 27: Trace Elements, Toxic Elements, and Vitamins

- a. Define metalloprotein, metalloenzyme, cofactor, trace element, ultra-trace element, and vitamin.
- b. State the biological functions of trace elements, toxic elements, and vitamins.
- c. Explain the absorption, transport, and excretion of trace and toxic elements.
- d. Distinguish between essential and non-essential elements.
- e. Discuss the clinical significance of deficiency and toxicity of trace elements.
- f. Determine specimen collection and handling for trace elements and vitamins.
- g. List common laboratory methods for measuring trace elements and vitamins.
- h. Delineate the biochemical roles of vitamins.
- i. Correlate alterations in vitamin status with circumstances of increased metabolic requirements, age-related physiologic changes, or pathologic conditions.
- j. Describe drug-nutrient interactions that influence vitamin status.
- k. Apply knowledge of clinical chemistry to answer case study questions in this chapter.

#### 13. Chapter 29: Point of Care Testing (POCT)

- a. Define point-of-care testing (POCT).
- b. Explain the role of the laboratory in the management of a POC program.
- c. Explain the process of implementing a new POC test.
- d. State the basic principles behind common POC applications.

## B. Affective

Upon completion of this course, the student will be able to exhibit the appropriate responsible behaviors by demonstrating:

1. A positive attitude by being prepared for each session, completing assigned tasks on time, and displaying self-motivation.
2. Organization by utilizing time effectively, sequencing, and prioritizing tasks for completion with time constraints and maintaining a neat clean work.
3. Attention to detail by diligently pursuing accuracy and documenting data/notes accurately and legibly.
4. Problem solving ability by explaining purpose of each step in: diagnosis, interpretation, procedure, recognizing discrepancies in techniques or procedures and repeating necessary lab tests when necessary.
5. Dependability by following directions, working independently after being given directions.
6. Stability and self-confidence by approaching and performing routine tasks confidently without assistance and maintaining composure.
7. Appropriate interpersonal skills by cooperating and communicating effectively with classmates and instructors and displaying courteous, considerate behavior and appropriate appearance.
8. Ethical behavior and integrity by respecting confidentiality of patient information, complying with professional standards and code of ethics, adhering to safety policies, and abiding by all rules and regulations of the institution.

## C. Psychomotor

1. Psychomotor skills will be evaluated in the laboratory: CLSC 3155: Clinical Chemistry I Laboratory.
2. Psychomotor objectives available in the CLSC 3155: Clinical Chemistry I Laboratory Syllabus.

## VI. Course Policies

- A. Textbook: Bishop, Michael L., Fody, Edward P., Van Siclen, Carleen, Mistler, James M., Moy, Michelle. 2023. *Clinical Chemistry. Principles, Techniques and Correlations. 9<sup>th</sup> Edition.* Jones & Bartlett Learning.

## B. Instructional Policies

1. Material and resources for the class will provided using the following:
  - a. Classroom lectures
    - Power Point
    - PDF
  - b. Blackboard
  - c. You Tube

2. Announcements, updates, notifications, and other important messages will be posted to Blackboard announcements.
  - a. It is the student's responsibility to check blackboard on a regular basis.
3. Students will be divided into groups randomly.
  - a. Study groups are meant to be help and support for all students through the semester.
  - b. All members ***must*** participate in class discussion.
4. An outline/study guide for each chapter/lecture will be uploaded to Blackboard in advance.
  - a. Students are ***strongly encouraged*** (should) to complete the outline/study ***before*** coming to class.
  - b. Outline/study guide will be discussed in class by students and guided by instructor.
  - c. There may be unannounced quizzes at the beginning of the class regarding the outline/study guide to be discussed that day.
  - d. Outline/study guide completion is strongly encouraged to be done with study group.
    - All members ***must*** participate in outline/study guide discussion in class.
5. The student must have available or have access to the following technological resources:
  - a. Computer/laptop with camera (webcam), audio and microphone.
  - b. USB flash drive
  - c. Good internet connection
  - d. Microsoft Office (Word, Power Point, Excel)
  - e. Adode (PDF) Flashplayer
  - f. Windows Media Player
  - g. Internet browser (i.e., Google Chrome, Mozilla Firefox)
  - h. Blackboard's Respondus LockDown Browser
6. LockDown Browser + Webcam Requirement
  - a. This course requires the use of LockDown Browser and a webcam for online quizzes and exams. The webcam can be the type that's built into your computer or one that plugs in with a USB cable. Watch this brief video to get a basic understanding of LockDown Browser and the webcam feature.
    - <https://www.respondus.com/products/lockdown-browser/student-movie.shtml>

b. Download Instructions

- Download and install LockDown Browser from this link:<https://download.respondus.com/lockdown/download.php?id=586140509>
- Once Installed:
  - ◊ Start LockDown Browser
  - ◊ Log into Blackboard Learn
  - ◊ Navigate to the test
  - ◊ Note: You won't be able to access tests with a standard web browser. If this is tried, an error message will indicate that the test requires the use of LockDown Browser. Simply start LockDown Browser and navigate back to the exam to continue.

c. Guidelines

- When taking an online test, follow these guidelines:
  - ◊ Ensure you're in a location where you won't be interrupted
  - ◊ Turn off all other devices (e.g., tablets, phones, second computers) and place them outside of your reach
  - ◊ Before starting the test, know how much time is available for it, and that you've allotted sufficient time to complete it
  - ◊ Clear your desk or workspace of all external materials not permitted - books, papers, other devices
  - ◊ Remain at your computer for the duration of the test
  - ◊ If the computer, Wi-Fi, or location is different than what was used previously with the "Webcam Check" and "System & Network Check" in LockDown Browser, run the checks again prior to the exam
  - ◊ To produce a good webcam video, do the following:
    - i. Avoid wearing baseball caps or hats with brims
    - ii. Ensure your computer or device is on a firm surface (a desk or table). Do NOT have the computer on your lap, a bed, or other surface where the device (or you) is likely to move

- iii. If using a built-in webcam, avoid readjusting the tilt of the screen after the webcam setup is complete
    - iv. Take the exam in a well-lit room but avoid backlighting (such as sitting with your back to a window).
  - d. Remember that LockDown Browser will prevent you from accessing other websites or applications; you will be unable to exit the test until all questions are completed and submitted.
  - e. Getting Help
    - Several resources are available if you encounter problems with LockDown Browser:
    - The Windows and Mac versions of LockDown Browser have a "Help Center" button located on the toolbar. Use the "System & Network Check" to troubleshoot issues. If an exam requires you to use a webcam, also run the "Webcam Check" from this area.
    - As applicable, insert information about your institution's help desk, including details about how to contact them. Some help desks want students to run the "System & Network Check" and the "Webcam Check" before they are contacted - and even, to forward the results of these checks at the time of opening a ticket.
    - Respondus has a Knowledge Base available from [support.respondus.com](http://support.respondus.com). Select the "Knowledge Base" link and then select "Respondus LockDown Browser" as the product. If your problem is with a webcam, select "Respondus Monitor" as your product.
    - If you're still unable to resolve a technical issue with LockDown Browser, go to [support.respondus.com](http://support.respondus.com) and select "Submit a Ticket". Provide detailed information about your problem and what steps you took to resolve it.

### C. Quiz and Exam Policy

1. Quizzes and Exams will be taken in the classroom using Blackboard Respondus LockDown Browser + Webcam.
2. **Quizzes may be announced or unannounced.**
3. **No** make-up exams or quizzes will be administered.

4. If an exam or quiz is missed the grade will be 0. All grades will be used for calculating the final grade, no grades will be dropped.
5. If a student cannot attend a test, quiz, or final exam for a **university-acceptable excuse**, inform the instructor as soon as possible and a time will be arranged accordingly with the instructor's schedule. It is responsibility of the student to notify the instructor of any absence and to provide legitimate documentation of absence as per university regulations.
6. The instructor will assign each student a seat for the examination.
7. All personal belongings including material, documents, book, etc. must be kept in the designated area assigned by the instructor.
8. If a calculator is needed for the exam, the instructor will let you know ahead of time. Calculator lids must be kept with your personal belongings. The instructor will check the calculators (especially if a scientific or graphic calculator is being used).

#### D. Attendance and Participation Policies

1. The student is expected to attend **all** lecture sessions in a **timely fashion**.
2. The student is expected to participate during class sessions.
3. The student is expected to access Blackboard regularly for material availability, announcements, etc.
4. The student should spend 4-6 hours a week studying the material and resources provided by the instructor and textbook.
5. Absences: After 3 absences you will be given a written warning. If absent 4 times, you may be dropped from the course.
6. Tardiness: Students arriving after 10 minutes will be considered tardy.
7. It is the responsibility of the student to notify the instructor of any absence or tardiness, and to provide legitimate documentation of absence as per university regulations.
  - a. The student is responsible for the material discussed in class as well as announcements made in class.
8. The instructor reserves the right to drop a student due to tardiness or absenteeism, when, in the judgement of the instructor, a student has been absent to a degree as to impair their status relative to credit for the course. The instructor may drop the student from the class with a "**W**" before the course drop deadline or an "**F**" after the course drop deadline.
  - a. Course **Drop** Deadline: October 28, 2022
9. The student is expected to participate in office hours.
  - a. Multiple students may be scheduled for the same office hour session.
  - b. If it is a private matter or you wish to discuss material or have questions and prefer to have a private office hour or online

session, please make sure to notify the instructor when appointment is being made.

#### E. Classroom Policies

1. The student will present to the classroom wearing appropriate clothing, i.e.:
  - a. Scrubs
    - CLS Junior Year Scrubs
  - b. If student will not be wearing scrubs, the student must dress **appropriately** for a classroom, i.e.,
    - No cleavage, see through or short (crop tops) shirts or tops.
    - No short shorts, hot pants, or leggings.
2. Cell phone usage is **NOT** permitted in the classroom.
  - a. Exceptions can be made in case of an emergency. **Please talk to the instructor beforehand.**
  - b. Phone **MUST** remain in silent mode inside your backpack, purse, pocket, etc.
3. Masks are not mandated for students, faculty, or staff in the classroom or at UTEP (per UTEP policies). However, if the student prefers to wear a mask, they can do so.
  - a. **This policy is subject to change depending on public health circumstances and UTEP policy change regarding this matter.**
4. COVID-19 PRECAUTION STATEMENT
  - a. Please stay home if you have been diagnosed with COVID-19 or are experiencing COVID-19 symptoms.
  - b. If you are feeling unwell, please let instructor know as soon as possible, so that appropriate accommodations can be made.
  - c. If you have tested positive for COVID-19, you are encouraged to report your results to covidaction@utep.edu, so that the Dean of Students Office can provide you with support and help with communication with your professors. The Student Health Center is equipped to provide COVID-19 testing.
  - d. The Center for Disease Control and Prevention recommends that people in areas of substantial or high COVID-19 transmission wear face masks when indoors in groups of people. The best way that Miners can take care of Miners is to get the vaccine. If you still need the vaccine, it is widely available in the El Paso area, and will be available at no charge on campus during the first week of classes. For more

information about the current rates, testing, and vaccinations, please visit [epstrong.org](http://epstrong.org).

#### F. Etiquette guidelines

1. Treat instructor and classmates with respect.
2. Address instructor and classmates properly and accordingly.
3. Use clear and appropriate language.
4. Vulgar/obscene language, discrimination for race, color, ethnicity, gender, political or religious views, and inappropriate conduct is ***prohibited*** in class.
5. The instructor reserves the right to ban the student from the classroom if vulgar language is being used if student is being disrespectful toward the instructor or classmates or exhibiting inappropriate conduct. This will be considered an absence. The student will be reported to the CLS program director.

#### G. Academic Integrity

There is a **zero-tolerance level** for academic dishonesty. Honesty and integrity are a critical aspect of your chosen profession, as well as patient confidentiality. Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes, but it is not limited to:

##### 1. Cheating

This means:

- a. Copying from the homework, in-class work, or exam paper of another student.
- b. Engaging in written, oral, or any other means of communication with another student during an exam or homework assignment or giving aid to or seeking aid from another student during a test.
- c. Possession and/or use of test material (class notes, books, reviews, outlines, or any other material) not authorized by the instructor or exam proctor during an exam or quiz.
- d. Using, obtaining, or attempting to obtain, by any means, a part of the whole test, test key, homework solution, computer program, and tests administered during past semesters.
- e. Substituting for another person or another person substituting oneself to take a test/quiz.
- f. Falsifying data, laboratory reports and/or other records or academic work offered for credit.

##### 2. Plagiarism

This means:

- a. The appropriation, buying, receiving as a gift, or obtaining by any means another's work, ideas, processes, results, or



words without giving appropriate credit. This includes intentionally, knowingly, or carelessly, presenting the work of another as one's own; failing to credit sources used in a work product; attempting to receive credit for work performed by another; failing to cite the World Wide Web, databases, and other electronic resources.

- b. The submission for credit of any work or material that is attributable (whole or in part) to another person (i.e., copying from another student).

### 3. Collusion

This means the unauthorized (secret or illegal) collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any provision of the rules on scholastic dishonesty.

Proven violations of the detailed regulations, as printed in the *Handbook of Operating Procedures (HOP)* (available in the Office of the Dean of Students), may result in sanctions ranging from disciplinary probation, failing grades on the work in question, failing grade in the course, suspension, or dismissal, among others.

## H. Student Support

In case of needed assistance:

1. Helpdesk
  - a. <https://www.utep.edu/irp/technologysupport/>
2. Miner Learning Center
  - a. <https://www.utep.edu/mlc/>
3. University Library
  - a. <https://www.utep.edu/library/>
4. Counseling and Psychological Services
  - a. <https://www.utep.edu/student-affairs/counsel/>
5. Student Support Services Program
  - a. <https://www.utep.edu/student-affairs/student-support-services-program/>

## I. Classroom Accommodations

If you have a disability and need special accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148, by email to [cass@utep.edu](mailto:cass@utep.edu), or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at [www.sa.utep.edu/cass](http://www.sa.utep.edu/cass).

## VII. Grading Policy

<b>Evaluation Technique</b>	<b>%</b>
Quizzes	15%
4 Partial Exams	15% each (60% total)
Final	25%
<b>Total</b>	<b>100%</b>

<b>Grading Scale</b>	<b>Grade</b>
90-100	A
80-89	B
75-79	C
70-74.9*	D*
69 or below*	F*
<b>* A grade of 75 or above is required to continue in the CLS program 100%</b>	

## VIII. Lecture Schedule\*

Week	Date	Topic/Chapter
1	August 23 August 25	Introductions, Syllabus & Schedule Discussion Chapter 4: Analytic Techniques
2	August 30 September 1	Chapter 5: Clinical Chemistry Automation Chapter 6: Proteins and Heme Derivatives
3	September 6 September 8	Chapter 6: Proteins and Heme Derivatives (cont.) Exam #1 Review?
4	September 13 September 15	<b>Exam #1: Chapters 4-6</b> Chapter 7: Non-Protein Nitrogen Compounds
5	September 20 September 22	Chapter 7: Non-Protein Nitrogen Compounds (cont.) Chapter 8: Enzymes
6	September 27 September 29	Chapter 8: Enzymes (cont.) Chapter 9: Carbohydrates
7	October 4 October 6	Chapter 9: Carbohydrates Exam #2 Review?
8	October 11 October 13	<b>Exam #2: Chapters 7-9</b> <b>Mini Midterm Break</b>
9	October 18 October 20	Chapter 10: Lipids and Lipoproteins
10	October 25 October 27	Chapter 11: Electrolytes
11	November 1 November 3	Chapter 12: Blood Gases, pH, and Buffer Systems
12	November 8 November 10	Exam #3 Review? <b>Exam #3: Chapters 12, 10-12</b>
13	November 15 November 17	Chapter 25: Therapeutic Drug Monitoring (TDM) Chapter 26: Toxicology
14	November 22 November 24	Chapter 27: Trace Elements, Toxic Elements, and Vitamins <b>Thanksgiving Day</b> 🍂
15	November 29 December 1	Chapter 29: Point of Care Testing (POCT) <b>Exam #4: Chapters 25-27, 29</b>
16	December 8	<b>Final Exam 9am-12pm Room TBD</b>

\*Schedule subject to change