



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



CLSC 3153: Body Fluids Laboratory
Syllabus
Fall 2022

I. Course Information

Days: Thursday

Time: 1:00pm – 3:50pm

- Time in lab will vary!!!
- You must complete **ALL** laboratory protocols before you can leave the lab. This includes bench clean-up and disinfection.
 - Let all the significant people in your life know that there is a probability that you may be coming home late and make the necessary arrangements.

Room: College of Health Sciences (CHS) 137 – CLS Laboratory

II. Instructor Information

Instructor: Nancy D. Cruz-Sanchez, MS, MLS (ASCP)^{CM}

Email: ndcruzsan@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.**
 - **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 to provide basic theory and entry level laboratory experience in the analysis of urine and other body fluids. This course will provide the student with the knowledge to accurately distinguish between normal and abnormal physical, chemical, and microscopic components found in body fluids.

IV. Course Goal

This course intends to provide the student with the knowledge, laboratory foundations, skills, and techniques to enable appropriate urinalysis and body fluids laboratory analysis and performance. The student will learn to competently perform and complete basic procedures and techniques, obtain results, and correctly interpret the findings given adequate clinical data. This course will provide the student with the knowledge to accurately distinguish between normal and abnormal results and will aid in the evaluation and analysis of the results using patient clinical history and evidence.

V. Course Objectives

A. Cognitive

Upon completion of this course, the student will be able to:

1. Understand, describe, and perform basic urinalysis and body fluids procedures and testing, and correctly interpret and evaluate the findings.
2. Describe universal precautions policy and its purpose.
3. Describe various types of urine specimens and state the diagnostic use for each type.
4. Explain the various collection techniques employed to obtain an assortment of specimens.
5. Explain the importance of accurate timing and complete collection of timed urine specimens.
6. State the possible changes in unpreserved urine and explain the mechanisms for each.
7. Completely perform all manual procedures introduced in this course within the appropriate standard deviation for the procedure.
8. Discuss the cause of normal urine odors, identify the conditions that change this urine characteristic, and list any odors associated with these conditions.

9. Discuss the origins of urine pigments.
10. State the volume and the solute composition of normal urine.
11. Describe and evaluate the physical, chemical and microscopic characteristics of urine, and correlate them to different disease states.
12. Perform the daily care and preventive maintenance of a microscope to include the performance of Kohler Illumination Procedure to ensure optimal specimen imaging. Use the appropriate objective to perform the microscopic examination.
13. Describe specific gravity (refractometer/urinometer).
14. Discuss methods for preserving urine specimens, including their advantages and disadvantages.
15. Perform, interpret, and explain the diagnostic information obtained from physical, chemical, and microscopic examinations.
16. Explain, perform, and interpret confirmatory tests.
17. Summarize the clinical significance of the following substances when they are found in the urine and describe the chemical principles used on reagent strips to measure them to include the limitations of the leukocyte esterase and nitrite tests.
 - a. Glucose
 - b. Bilirubin
 - c. Ketone
 - d. Specific Gravity
 - e. Blood
 - f. pH
 - g. Protein
 - h. Urobilinogen
 - i. Nitrite
 - j. Leukocyte esterase
18. Identify the following elements found in urine sediment and discuss their clinical significance.
 - a. Bacteria
 - b. Clue cells
 - c. Fat
 - d. Fecal contaminants
 - e. Fibers
 - f. Red Blood Cells
 - g. Mucous threads
 - h. Crystals
 - i. Casts
 - j. Parasites
 - k. Yeast cells
19. Compare and contrast the sensitivity and specificity of the respective screening and confirmatory methods for chemical testing of the urine, including sources of false positive as well as false negative reactions.

20. Describe the performance of the physical examination, biochemical examination and morphological examination of seminal fluid and the results expected from a normal specimen.
21. Describe the performance of physical, biochemical, and morphological examination of CSF, synovial, and peritoneal fluid.
22. Describe the clinical significance of the L/S ratio for amniotic fluid.
23. Describe the clinical significance of increased chloride in sweat.
24. Describe the significance of increased neutrophils in a stool specimen, the presence of fecal fat, and carbohydrate intolerance.
25. Explain the principle and significance of occult blood testing.
26. Recognize discrepancies in techniques or procedures and repeat lab tests when necessary.
27. Recognize pre-analytical errors and their effect on patient results. Such as:
 - a. Inappropriate test request
 - b. Order entry
 - c. Patient/specimen misidentification
 - d. Sample collection: i.e.:
 - Hemolysis
 - Clotting
 - Insufficient volume
 - e. Inappropriate container
 - f. Handling
 - g. Storage
 - h. Transportation
28. Recognize analytical errors and their effect on patient results. Such as:
 - a. Equipment malfunction
 - b. Sample mix-ups
 - c. Interference (endogenous or exogenous)
 - d. Undetected failure in quality control
29. Recognize post-analytical errors and their effect on patient results: Such as:
 - a. Excessive turn-around-time
 - b. Improper data entry
 - c. Manual transcription error
 - d. Failure/delay in reporting critical values
 - e. Incorrect interpretation

B. Affective

To show the appropriate responsible behaviors students will demonstrate:

1. A positive attitude by being prepared for laboratory sessions, completing assigned tasks on time, and displaying self-motivation.
2. Organization by utilizing time effectively, sequencing, and prioritizing tasks for completion with the time constraints and maintaining a neat, clean work area.

3. Adherence to safety rules by correct usage of PPE, proper disposal of materials, reagents, and specimens, and avoiding eating, drinking, and chewing gum in the laboratory.
4. Attention to detail by diligently pursuing accuracy and documenting data accurately and legibly.
5. Problem solving ability by interpretation of results, understanding the analytical technique principle and procedure to correct the error by repeating the procedure when necessary.
6. Follow directions and work independently after being given directions.
7. Stability and self-confidence by approaching and performing routine tasks and analytical procedures confidently without assistance and maintaining composure.
8. Appropriate interpersonal skills by cooperating and communicating effectively with classmates and instructor. Displaying courteous, considerate behavior and appropriate appearance.
9. 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

After learning experiences are introduced, the student will gradually and completely:

1. Examine specimen for visual evidence of contamination (i.e.: fecal material).
2. If necessary, store specimens appropriately.
3. Assemble worksheets and other documenting materials.
4. Observe and record temperatures (part of quality control and assurance protocol).
5. Examine reagents for correct storage conditions.
6. Perform and record quality control checks and preventive maintenance on instruments/equipment.
7. Document corrective actions when taken.
8. Perform and record quality control checks for reagent strip tests, tablet tests, and other chemical tests.
9. Perform and record quality control check for microscopic examination.
10. Perform and record troubleshooting on equipment/instruments.
11. Prepare specimen for analysis.
12. Prepare sediment for microscopic examination.
13. Perform macroscopic examination (i.e., physical and chemical) of urine.
14. Perform and record qualitative/semi-quantitative tablet or alternate chemical tests.
15. Perform and record confirmatory tests and qualitative screening tests for substances associated with metabolic diseases.
16. Perform microscopic examination of urine.
17. Prepare microscope for optimized viewing.

18. Record microscopic examination results using established protocol and terminology.
19. Report test results.
20. Perform physical, biochemical, and morphological examination of CSF, synovial, pleural, seminal, and peritoneal fluid.
21. Perform fecal analysis to include occult blood, fecal fat, fecal leukocytes, immunoassay for fecal leukocytes (lactoferrin), and fecal carbohydrates.
22. Observe universal precautions when handling body fluid specimens.
23. Preparation of 10% bleach.
24. **Clean, disinfect and organize** the work area after each laboratory session with 10% bleach.
25. Dispose of biohazard materials (contaminated gloves, paper towels, test strips, etc.) in the appropriate containers.
26. Dispose of clean paper towels, papers, etc., in the regular trash can.

VI. Course Policies

- A. Textbook: Brunzel, Nancy A. 2018. *Fundamentals of Urine & Body Fluid Analysis*. 4th Edition. Elsevier.
- B. Instructional Policies
 1. Material and resources for the class will provided using the following:
 - a. Blackboard Collaborate Ultra
 - b. 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 are required to read, ahead of time, handouts, laboratory exercise protocol, and other materials and/or resources provided in Blackboard.
 4. Students are required to come to the laboratory session with the **printed** material for the laboratory exercise (i.e., laboratory protocol, data/calculations/observations sheet).
- C. Exam Policy
 1. Exams will be taken in the laboratory in written and/or practical form.
 2. No make-up exams will be given.
 3. If an exam is missed the grade will be 0. All grades will be used for calculating the final grade, no grades will be dropped.
 4. If a student cannot attend a test, practical exam, midterm, 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.
 5. The instructor will assign each student a seat for the examination.

6. All personal belongings including laboratory material, documents, etc. must be kept in the designated area for personal belongings or in the bench drawers (lab material).
7. 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. Assignment / Lab Report Policy

1. Students are required to submit/hand in assignments (laboratory reports) in a timely manner and in the appropriate designated folder or Blackboard folder).
 - a. Deadlines will be announced previously as assignments are programmed and requested on each laboratory session.
 - b. Failure to hand in (submit)/complete an assignment in a timely manner will lead to a 2-point deduction each day the assignment is late (includes weekends and holidays).
 - If a legitimate reason/excuse (death, illness, etc.) prevents the student from handing the assignment on the due date, inform the instructor as soon as possible, bring the necessary documentation and considerations may be made, depending on situations, on an individual basis.
 - **NO** make-up assignments will be offered.
 - c. Assignments/laboratory reports are to be submitted/handed in **neatly** and in ink or typed. They must also be properly identified (name, date).
 - d. Laboratory reports must contain **ALL** laboratory data, calculations, significant figures, results, and units properly identified and presented. If graphs are required, they must contain proper axis identification, title, units, data, and data identification (legend).

E. Attendance and Participation Policies

1. The student is expected to attend **ALL** laboratory sessions in a **timely fashion**.
2. The student is expected to actively participate in each laboratory session.
3. The student is expected to access Blackboard regularly for material availability, announcements, etc.
4. The student should spend 2-3 hours a week studying the material and resources provided by the instructor and textbook.
5. Absences: After 2 absences you will be given a written warning. If absent 3 times, you may be dropped from the course.
6. Tardiness: Students arriving after 10 minutes will be considered tardy (points will be deducted).
7. It is responsibility of the student to notify the instructor of any absence and to provide legitimate documentation of absence as per university regulations.
8. The instructor reserves the right to drop a student due to tardiness or absenteeism, when, in the judgment of the instructor, a student has been absent to a degree as to impair his or her 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. October 28, 2022

9. In case of being absent to a laboratory session, **NO MAKE-UP LABS WILL BE AVAILABLE. NO EXCEPTIONS.** The student is responsible for the material discussed in class as well as announcements made in class.

10. 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.

F. Laboratory Policies

1. The student will present to the laboratory session wearing the appropriate clothing, i.e.,

b. Scrubs

- CLS Junior Scrubs

c. If the student will not be wearing scrubs, the student must dress **appropriately** for a laboratory:

- Long jeans/pants/skirts (**NO** leggings)
- Appropriate shirt with sleeves (**NO** cleavage, tank tops, halter tops, see through, crop tops)

d. Closed shoes (sneakers, boots, crocs (no holes)) (**NO** sandals or open toed shoes allowed).

- **Shoes must be made of non-porous materials and meet OSHA requirements. CANVAS OR WEBBED MATERIALS ARE NOT ACCEPTABLE.**

e. Hair must be tied back (i.e., ponytail, bun, braid).

f. **NO** charm bracelets, long earrings, long necklaces permitted.

2. Personal protective equipment (PPE)

a. The student must wear the appropriate personal protective equipment at **ALL TIMES** in the laboratory (gloves, lab coat, face shield, etc.)

b. **NO** student will be allowed in the laboratory without the appropriate PPE.

3. **NO eating, drinking, chewing gum or smoking in the laboratory.**

4. Personal belongings have a designated area. **NO** personal belongings will be permitted in the laboratory with the exception of pencils, pens, sharpies, handouts, books, and calculators.

5. Cell phone usage is **NOT** permitted in the laboratory.
 - a. Exceptions can be made in case of emergency. **Speak with the instructor beforehand.**
 - b. Phone **MUST** remain in silent mode with personal belongings in designated area.

6. Masks are not mandated for students, faculty, or staff in the laboratory or at UTEP (per UTEP policies). However, if the student prefers to wear a mask, he/she can.
 - a. **This policy is subject to change depending on public health circumstances and UTEP policy change regarding this matter.**

7. COVID-19 PRECAUTION STATEMENT
 - a. Please stay home if you have been diagnosed with COVID-19 or are experiencing COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible, so that we can work on appropriate accommodations. 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.
 - b. 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.

B. 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 because of race, color, ethnicity, gender, political or religious views, and inappropriate conduct is **prohibited** in class/lab.
5. The instructor reserves the right to ban the student from the laboratory 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, and no-make-up laboratories will be administered. The student will be reported to the CLS program director.

C. 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's 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.

D. 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/>

E. Classroom Accommodations

If you have a disability and need classroom accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148, by email to 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.

VII. Grading Policy

Evaluation Technique	%
Assignments	15%
Practical Exam 1	20%
Practical Exam 2	20%
Written Mid Term Exam	20%
Final Exam	25%
Total	100%

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

VIII. Laboratory Schedule*

Week	Date	Laboratory Session*
1	August 25	Syllabus, Evaluations Quality Assessment (Quality Control) Specimen Collection and Processing
2	September 1	Lab #1: Physical Examination of Urine and Specific Gravity
3	September 8	Lab #2: Chemical Examination of Urine and Confirmatory Tests
4	September 15	Lab #3: Practice: Physical and Chemical Examination and Confirmatory Tests
5	September 22	Practical Exam #1
6	September 29	Lab #4: Microscopic Examination of Urine
7	October 6	Lab #5: Practice: Physical, Chemical and Microscopic Examination
8	October 13	Mini Midterm Break
9	October 20	Midterm
10	October 27	Lab #6: Fecal Analysis
11	November 3	Lab #7: Body Fluids
12	November 10	Lab #8: Semen Analysis
13	November 17	Practical Exam #2
14	November 24	Thanksgiving 🍂
15	December 1	Final Exam

*Schedule subject to change