

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



CLSC 3368 Immunoematology CRN 21885

(Blood Banking)

Restricted for CLIN majors only

Spring 2022

Instructor

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Office Hours: Monday 1:00 – 3:00 p.m. or Tuesday 9:00 – 11:00 a.m. However, the best time to talk to me is after class or laboratory, as our schedules usually do not allow for meeting at these times. If you are unable to see me at this time, you may arrange an appointment for another time. You can reach me by phone at any time, if I am unable to answer your call, **please leave a detailed message** and I will return your call as soon as possible. **If you feel confused and lost please come and see me;** Please do not wait until the last minute. I would like to invite you to use the office hours to clarify points you did not understand in lecture, to discuss subject matter according to your special interests, or to talk about your career goals. If you feel confused or lost, do not wait until the last minute to see me.

Immunoematology is more commonly known as "blood banking" is a branch of immunology that incorporates hematology and the immunologic properties of blood. Immunoematology deals with the giving and receiving of blood and blood components. This is the area of laboratory medicine dealing with preparing blood and blood components for transfusion as well as selection of appropriate, compatible components for transfusion. Immunoematology, otherwise known as Blood Banking, is the name given to the study of antigens, antibodies, and procedures involved in the transfusion services department. **A background in immunology and genetics is essential to understanding the theory and practice of blood bank.**

NOTE: As a UTEP CLS student all, our courses are interrelated and you may be asked questions over material you have covered in previous CLS courses and or concurrent courses you are taking in a semester.

NOTE: If you are sick – stay home and...

1. Call Ms. Licerio to inform of your absence – 747-8396
2. Notify the instructor BEFORE class if possible
3. If you test positive for COVID inform UTEP EH&S at 915-747-7162 or COVIDaction@utep.edu

Course Description

This course covers the immuno-chemical reactivity of blood antigens & antibodies, including the interrelationships of genetics, blood grouping, compatibility testing, hemolytic disease of the newborn, and the implications for transplantation, paternity and forensic testing. Transfusion services are investigated including donor selection, component preparation, and storage, transfusion practices including the quality control/assurance issues in the modern Transfusion center. HLA testing and component therapy is explored. Pre-analytical, analytical, and post-analytical aspects of immunohematology will be discussed.

Course Goal

This course is designed to present not only the theoretical and practical basis for all technical procedures accomplished in the modern transfusion services laboratory, but also to present the fears and anxieties by those patients and families who must depend upon your clinical expertise to assure them that they will not be acquiring AIDS or any other blood borne pathogen. You must fathom the importance of your knowledge both theoretical and practical in relation to safety (yours and the patient's) and in relation to the life giving decisions you will be making. Supervision and management procedures unique to this department will be covered including issues of quality control and quality assurance and medicolegal and ethical aspects of providing Blood collection and transfusion services.

Cognitive Objectives

Upon successful completion of the course, the student should be able to:

1. Explain and give rationale for the various quality control procedures performed in a transfusion service laboratory (pre-analytical, analytical and post analytical).
2. Realize the importance of quality control and quality assurance by reviewing case studies of transfusion reactions due to inaccurate quality control and quality assurance issues.
3. Identify the major blood group antigens and antibodies and their particular specificities and sensitivities as applied to identification and antibody production.
4. Understand the significance of human blood group antigens and antibodies in relation to blood transfusion and the well-being of the patient.
5. Characterize the genetic principles governing the inheritance of blood group and HLA antigens.
6. Describe the protective techniques and safety practices utilized in the transfusion service laboratory and fathom the consequences for not following such techniques and practices.
7. Describe and explain the theory involved in donor selection criteria, approved blood collection procedures, compatibility testing, component preparation, and transfusion therapy procedures.

8. Demonstrate a positive attitude toward Immunohematology and appreciate the value of accurate testing and evaluation in providing the patient and the clinician accurate tools for diagnosis and treatment.
9. Recreate patient's and family member's anxieties and expressions associated with receiving blood transfusions.

Affective Domain Objectives

Goals / Purpose: Clinical Laboratory Science students are expected to show growth in professional behaviors appropriate to a laboratory setting and to maintain those behaviors possessed at time of entry.

Objectives: To show the appropriate responsible behaviors, students will demonstrate:

1. A positive attitude by being prepared for lecture and laboratory sessions, completing assigned tasks on time, and displaying self-motivation and initiative.
2. Organization by utilizing time efficiently, sequencing and prioritizing tasks for completion with time constraints, and maintaining a neat and clean work area.
3. Attention to detail by diligently pursuing accuracy and documenting data accurately and legibly.
4. Problem solving ability by explaining the purpose of each step in a procedure or instrument operation, recognizing discrepancies in techniques or procedures, and repeating lab test when necessary.
5. Dependability by following directions, working independently, after being given directions, and being present and on time with only excused absences.
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 the 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.

Psychomotor Domain Objectives

Will be covered in the Immunohematology laboratory CLSC 3269.

The Flipped or Active Laboratory / Classroom

Most of our laboratories and some lecture courses follow the “Flipped or Active Classroom” model. **Students prepare for the in-person sessions by reviewing course materials and content in advance.** When they arrive in class they typically have a “quiz” and may work in groups to apply their background knowledge to problem solving case studies or situations. In this model the **faculty member acts as their guide** and can provide instruction and corrective action as the students go through the work problems. Instead of sitting in a classroom while the instructor tells them how to do the work, the students are actually practicing the problems solving work with the faculty member’s help. Although this is often a significant adjustment for students who have not taken courses like this before, they quickly realize the value of the guided practice sessions.

Your Role in This Course

In order for you to be ready for this class (active classroom, flipped, TBL), it will be important for you to read and prepare outside of class time. Your primary knowledge and understanding of readings will be essential for success with in-class activities and assignments, many of which will take place in collaboration with your team.

Orientation to TBL

The research on teaching and learning is very clear: students learn best when they are actively working with others in teams on real and challenging problems. In this class you will be placed in **permanent** teams to help team mates learn from each other and the instructor on basic blood bank principles and real-life problems that you will encounter. Passively listening to lecture and memorizing information will not prepare you for your profession role as a medical laboratory scientist where you will be required to solve problems on a daily basis. Discussion, debate and problem solving with others will serve you much better than listening to an instructor talk.

The Study Guide (SG): A tool to Help You Study for In-Class Assignments and Exams

The SG is a tool to help you focus your studying and prepare effectively and efficiently for each class session. The questions in the SG are questions you should be able to answer as a medical laboratory Scientist. The SG also serves as your preparation tool for the exams. In other words, the questions that are on the SG are directly related to the questions on the exams. The SG can also serve as your notebook (if you take notes) and review tool to prepare for the midterm and final exam.

If you chose not to complete the SGs, you also chose not to come to class prepared which will result in

- (1) not understanding what is being discussed in class;
- (2) not being able to contribute to the in-class assignments;
- (3) being an annoyance to your team mates and the instructor because you can’t contribute appropriately

- (4) not being able to help other team members understand the material better;
- (5) a negative evaluation by your team members; and importantly
- (6) you are not using this helpful tool to prepare for the exams and thus likely earn poor grades.

In-class Team Assignments

The in-class team assignments will ask you to make specific decisions concerning specific testing related situations and problems based on the studying you did for the Study Guide. A number of those assignments may be graded. Which ones are graded will be announced during the class session

TIME NEEDED TO STUDY! How to be successful in this course

The typical rule is for each hour you spend in class, you should spend 2-3 hours outside of class studying. On average, you need to read a minimum of one chapter per day and complete the individual assignments.

Try to follow these steps:

1. DO THIS FIRST!!! Look at the TENTATIVE course schedule and read the assigned chapter to be covered that day before reviewing the power points
2. Open PowerPoint lecture and have textbook open and take notes alongside the power point. DO NOT BE AFRAID TO MARK UP YOUR BOOK.
3. After reviewing the lecture and taking notes, RE-READ THE CHAPTER.
4. Come prepared to class by completing your group and or individual assignment BEFORE class. Answer the objective in the beginning of the chapter, review case studies, and answer questions in the back of the chapter.
5. Bring questions or ask for clarifications with you when you come to the lab.
6. Make copies of your completed Study Guides as you will have to leave a copy of the study guide in the team folder.

Major Mistakes Students Make that Negatively Affect Their Grades:

- 1) Not actively contributing to teamwork.
- 2) Being absent when in-class assignments were selected for grading.
- 3) Procrastinating, not working in advance of a deadline and missing it.
- 4) Having poor time management skills and strategies leading to not putting in the necessary work and time outside of class.
- 5) Scholastic Dishonesty

Attendance of Class Sessions: Being absent from even one class session will hurt your understanding and performance in the class. You are also likely to miss graded in-class assignments that make up 10% of your grade. If you are not present, you cannot get the points.

Technology Requirements

Course content is delivered via the Internet through the Blackboard learning management system (LMS). Ensure your UTEP e-mail account is working and that you have access to the Web. You may use any of the primary Web browsers—Explorer, Google Chrome, Firefox, Safari, etc. When having technical difficulties, try switching to another browser.

You will need to have or have access to a computer/laptop, printer, scanner, a webcam, and a microphone. You will need to purchase a USB (flash drive). You will need to download or update the following software: Microsoft Office, Adobe, Flashplayer, Windows Media Player, QuickTime, and Java. Check that your computer hardware and software are up-to-date and able to access all parts of the course. If you encounter technical difficulties of any kind, contact the [Help Desk](#).

Technology Support, Study Spaces, and Wi-Fi

Technology Support will be available for all students studying remotely or taking classes on campus. Students may contact Technology Support for laptop repair, academic software needs or to set up personal computers to print documents utilizing campus printers. Laptops and Wi-Fi hotspots also are available for checkout. Students should contact [Technology Support](#) when help is needed with Blackboard or the online proctoring software.

Lounges, lobbies, and common areas for studying have been reconfigured to support social distancing. Students are encouraged to take advantage of outdoor venues where Wi-Fi has been expanded and enhanced. These venues include:

- Centennial Plaza
- Engineering breezeway
- Interdisciplinary Research Building patio
- Fox Fine Arts 2nd floor breezeway

Required Texts

- ❖ Denise M. Harmening. (2019). *Modern Blood Banking and Transfusion Practices. 7th edition*. F.A. Davis Company. ISBN 9780803694620
- ❖ Jarreau, P. (2021). *Clinical Laboratory Science Review a Bottom Line Approach (6th ed.)*. Louisiana State University Health sciences Center foundation. New Orleans. ISBN 978-0-9670434-3-2



EXAMINATIONS:

Five exams and a **comprehensive final** will be given. Exams are worth 45% of the total grade and the final is worth 35%. **No make-up exams will be given.** If an exam is missed (0%), the final grade will be based on the average of 4 exams. **None of the test grades will be dropped.**

HOW DO YOU EARN YOUR GRADE?

Your grade will consist of 3 parts. The percentages shown for each item will be multiplied by the scores you earn.

90% Assessments of Individual Performance	10% Assessments of Team Performance
10% i-RAT / Ticket to Class / Quizzes 45% 5 Exams questions based on the SGs** 35% comprehensive final exam**	5% t-RAT: 5% Team Assignments; random selection

Grade Scale (%)

100 -90	A
89.9 - 80	B
79.9 - 75	C
74.9 – 70	D (is not passing in CLS)
69.9 or below	F

***All exams including the final will be comprehensive**

***Information from Laboratory (CLSC 3269) will be included**

Test Policy:

There will be five examinations and a comprehensive final. **All exams will be taken on-line during class time. You will need a camera and respondus lockdown to take the exam.** The lecture exams may include brief essay questions and case studies along with multiple choice questions. **No make-up exams will be offered.** If you cannot attend an exam for a legitimate reason, (death, illness etc.) inform the instructor as soon as possible and the instructor will arrange a new time. At the instructors discretion an exam may be taken late **with an automatic deduction of 10 points.** If the student does not make any arrangements (s)he will receive a ZERO on the exam. **Please notice that our grade scale is different from the standard grade scale.** In order to pass the course you must earn a **75% average and a 74.9% does not constitute a passing grade.** Students in the CLS program cannot continue with the program with a grade of D or below.

Although this course has a separate laboratory, all topics, strategies, methods and procedures covered in the laboratory can and will be tested on in the lecture class.

It is vital that the student not only grasps the basic knowledge but also be able to think critically and to interpret laboratory results. The minute you do not understand, immediately ask for

clarification. A major cause of being unsuccessful in this class is the student's failure to ask for help. DO NOT WAIT UNTIL THE LAST MINUTE TO ASK FOR HELP!

UNANNOUNCED QUIZZES AND ASSIGNMENTS:

Both announced and unannounced quizzes and assignments will be given throughout the course and will constitute part of your individual performance assessment. You will need to log on to your Immunohematology class every day to make sure you do not miss any of the assignments or quizzes. Assignments turned in late will not be accepted.

Course Drop policy

According to UTEP Curriculum and Classroom Policies, "When, in the judgment of the instructor, a student has been absent to such 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 grade of "W" before the course drop deadline and with a grade of "F" after the course drop deadline." See academic regulations in the UTEP Undergraduate Catalog for a list of excuse absences. Therefore, if I find that, due to non-performance in the course, you are at risk of failing, I will drop you from the course. I will provide 24 hours advance notice via email.

Scholastic Integrity

Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Cheating may involve copying from or providing information to another student, possessing unauthorized materials during a test, or falsifying research data on laboratory reports. Plagiarism occurs when someone intentionally or knowingly represents the words or ideas of another as ones' own. Collusion involves collaborating with another person to commit any academically dishonest act. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. All suspected violations of academic integrity at The University of Texas at El Paso must be reported to the Office of Student Conduct and Conflict Resolution (OSCCR) for possible disciplinary action. To learn more, please visit HOOP: Student Conduct and Discipline.

Accommodations Policy

The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of University programs, services and activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Reasonable accommodations will be made unless it is determined that doing so would cause undue hardship on the University. Students requesting an accommodation based on a disability must register with the UTEP Center for Accommodations and Support Services (CASS). Contact the Center for Accommodations and Support Services at 915-7475148, or email them at cass@utep.edu, or apply for accommodations online via the CASS portal.

Harassment:

Please be aware that harassment is unacceptable in the classroom. No jokes, comments of sexual nature as well as racism will be tolerated. The student that uses harassment will be sent to the Dean of students for disciplinary action.

Title IX Statement:

Title IX of the Education Amendments of 1972 (Title IX), prohibit discrimination on the basis of sex in education programs or activities operated by recipients of Federal financial assistance. Sexual harassment of students, which includes acts of sexual violence, is a form of sex discrimination prohibited by Title IX. Sexual violence refers to physical sexual acts perpetrated against a person's will or where a person is incapable of giving consent due to the victim's use of drugs or alcohol. An individual also may be unable to give consent due to an intellectual or other disability. A number of different acts fall into the category of sexual violence, including rape, sexual assault, sexual battery, sexual coercion, stalking, and relationship violence. All such acts of sexual violence are forms of sexual harassment covered under Title IX.

In accordance with Title IX of the Education Amendments of 1972, UTEP does not discriminate on the basis of sex in the operation of its educational programs and activities. This commitment to non-discrimination applies to both employment in and admission to such programs and activities. [Link to full text at <http://admin.utep.edu/Default.aspx?tabid=68750>]

Inquiries regarding Title IX should be referred to the University's Title IX Coordinator(s):

Sandy Vasquez , Title IX Coordinator (Investigation of concerns related to Faculty and Staff)

915.747.5662 svasquez@utep.edu

Dr. Catie McCorry-Andalis, Deputy Title IX Coordinator (Education, Training and Outreach)

915.747.5648 cmandalis@utep.edu

Dr. Charlie Gibbens Deputy Title IX Coordinator (Interim Assistant Vice President for Student Support) Oversees investigations of concerns related to Students

915-747-7448 cegibbens@utep.edu

Student Support Services:

All students experience stress and emotional challenges. The following resources can help those feeling stressed, experiencing loss, and considering ending their life.

- UTEP's Counseling Center offers free counseling to all students with the same number leading to an after-hours crisis line: **(915) 747-5302**
- Mental Health Crisis Line **(915) 779-1800**
- National Suicide Prevention Hotline **1-800-273-8255** and Veterans Crisis Line **1-800-273-8255**
- NAMI of El Paso (National Alliance Against Mental Illness) **(915) 534-5478**

Blood Bank Tentative Section Schedule

Section I: Introduction, Genetics, ABH (Chapters 1 – 3, 5, 6)

JAN 19 - FEB 9

- Jan 19 Basic genetics /Basic immunology/ Antiglobulin test
- Jan 24 Basic genetics /Basic immunology/ Antiglobulin test
- Jan 26 Basic genetics /Basic immunology/ Antiglobulin test
- Jan 31 ABO blood group system
- Feb 2 ABO blood group system /ABO antibodies
- Feb 7 ABO blood group system /ABO antibodies Lectins/ABO Discrepancies

FEB 9 EXAM I

Section II: Rh and other major blood group systems (Chapters 7 – 9)

FEB 14 - FEB 23

- Feb 14 Rh Blood group system
- Feb 16 Rh Blood group system Lewis/MNSs/P/I
- Feb 21 Rh Blood group system Lewis/MNSs/P/I

FEB 23 ABO/Rh Exam II

Section III: Major blood group systems (Chapters 9 – 10)

FEB 28 – March 23

- Feb 28 Lewis/MNSs/P/I
- March 7 Kell/Kidd/Duffy/Lutheran
- March 9 Kell/Kidd/Duffy/Lutheran

March 14 – 16 Spring Break

- March 21 Kell/Kidd/Duffy/Lutheran/Miscellaneous systems

March 23 ABO/Rh/ COLD and Warm antibodies Exam III

Section IV: Donor selection, Antibody I.D., (Chapters 10 - 11, 13, 15 - 18)

MARCH 28 – APRIL 18

- March 28 Detection and Identification of Antibodies also covered in lab
- March 30 Pretransfusion testing – compatibility
- April 4 Pretransfusion testing – compatibility
- April 6 Donor screening and Component Preparation
- April 11 Transfusion Therapy, Aphaeresis, Transplantation
- April 13 Adverse effects of Blood Transfusion

APR 18 EXAM IV

**I strongly suggest that
you go give blood in
order for you to
comprehend Donor
selection.**

Section V: HDN, Relationship, AIHA, Stem Cell, and miscellaneous, (Chap 14, 20, 21, 23, 24)

APRIL 20 – MAY 4

- April 20 Transfusion-Transmitted Diseases
- April 25 Transfusion-Transmitted Diseases
- April 27 HDN and Autoimmune Hemolytic Anemia
- May 2 Relationship testing, HLA TESTING

MAY 4 EXAM V

MAY 13 COMPREHENSIVE FINAL 9-12