

The University of Texas at El Paso
College of Health Sciences

Clinical Laboratory Science Program



**CLSC 3368 Immunohematology
(Blood Banking)**

Course Outline



Audio or video recordings are not permitted

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.

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 immunoematology will be discussed.

Healthy People 2020 :This course aligns with the Healthy People 2020 initiative and discusses Blood Disorders and Blood Safety as indicated in the Healthy People 2020 Topics and Objectives.

<http://www.healthypeople.gov/2020/topicsobjectives2020/default.aspx>

Blood Safety

Blood service providers are responsible for the collection, maintenance, and distribution of the Nation's blood supply. Providers include:

- ❖ U.S. Department of Health and Human Services
- ❖ American Association of Blood Banks
- ❖ American Red Cross
- ❖ America's Blood Centers

Certain blood types are rarer, causing limited supplies. Other blood products, like platelets, have a limited shelf life; on average, less than a 2-day supply is available.

A safe and adequate blood supply is vital for health services such as surgeries, cancer treatment, emergency management of trauma, and care of persons with hemoglobinopathies who are on chronic transfusion therapy. Outreach and education to inform the public about the importance of donating blood can help alleviate blood shortages.

Instructor

M. Lorraine Torres, Ed. D, MT (ASCP)

CNHS Room 423, Phone 747-7282,

E-mail: lorit@utep.edu

Office hours: TR 3:00 – 4:00* or by appointment

*If you are unable to see me at this time, you may arrange an appointment at another time. You may schedule meetings by blackboard, telephone, or in person after lecture/laboratory session. Please use office hours to clarify lecture objectives, special interests or career goals at the earliest convenience for both parties. The best time to reach me by phone is during posted office hours. If I am unable to answer your call, please leave a detailed message and I'll return your call as soon as possible.

Class schedule

Monday & Wednesday: 8:00 – 9:20 am CHS room 135

Grade Scale (%)

100 -90	A
89.9 - 80	B
79.9 - 75	C
74.9 – 70	D
69.9 or below	F

Course Evaluation

5 exams**	(50% of final grade)
TTC & Quizzes	(15% of final grade)
Final**	(35% of final grade)

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

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

Required Texts

- ❖ Denise M. Harmening. (2019). *Modern Blood Banking and Transfusion Practices. 7th edition.* F.A. Davis Company.

Optional Text

- ❖ *Technical Manual Latest edition.* AABB.

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 the dreaded killer, 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.

Instructional Strategies/Attendance:

Immunohematology, 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. The student must make a commitment to keep up with the readings and be aware that unexcused absences and tardiness to class may lead to a lower grade as unannounced quizzes and Ticket to Class comprise 15% of the final grade.

All exams will be comprehensive. **NO MAKE UP EXAMS WILL BE GIVEN!** At the instructors discretion an exam may be taken late **with an automatic deduction of 10 points.** **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!**

The student is expected to attend all classes and lab sessions. It is responsibility of the student to notify the instructor of any absence. In the case of an emergency or illness, the instructor should be notified as soon as possible. When, however, in the judgment of the instructor, a student has been absent to a degree as to impair his/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 with an F after the course drop deadline. If the student misses an exam and he/she does not have appropriate justification a grade of 0 (zero) will be given.

University Policy on examinations and quizzes:

When examinations are administered, students are to place book bags, papers and other personal belongings at the front of the room. Students will spread around the room when seating themselves. No hats, caps, or bulky clothing may be worn. Students will return examination papers in to the exam monitor before leaving the room for any reason; once a student has left the room, he/she may not continue with the examination.

If a student misses an exam, a make-up exam may be taken only if the student has informed the instructor of the absence prior to the beginning of the examination, and only if the absence is approved by the instructor, only in rare instances will a student be excused from an examination or a quiz. If permission is given to take an exam or a quiz, it will be scheduled at the convenience of the instructor. Make ups exams/quizzes, while they may cover the same material may differ from the exam/quiz taken by the rest of the class in organization, format, or specific item data.

Academic dishonesty:

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 person's as ones' own. And, 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. Violations will be taken seriously and will be referred to the Dean of Students Office for possible disciplinary action. Students may be suspended or expelled from UTEP for such actions.

Academic dishonesty is an assault upon the basic integrity and meaning of a University. Cheating, plagiarism, and collusion in dishonest activities are serious acts which erode the University's educational and research roles and cheapen the learning experience not only for the perpetrators, but also for the entire community. It is expected that UTEP students will understand and subscribe to the ideal of academic integrity and that they will be willing to bear individual responsibility for their work. Materials (written or otherwise) submitted to fulfill academic requirements must represent a student's own efforts. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. Violations will be referred to the Dean of Students Office for possible disciplinary action. Students may be suspended or expelled from UTEP for such actions.

Any student suspected of academic dishonesty may be subject to disciplinary action, including the possibility of failure of the course and dismissal from the university. “Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work

or materials that are attributable in whole or in part to another person, taking an examination for another person, any act to give unfair advantage to student or the attempt to commit such acts.” Regent’s Rules and Regulations, Part One, Chapter VI, Section 3, Subsection 3.2, Subdivision 3.22. Since scholastic dishonesty harms the individual, all students, and the integrity of the university, policies on scholastic dishonesty will be strictly enforced.

Please read material on academic integrity <http://sa.utep.edu/osccr/academic-integrity/>

Students with Disabilities:

If you have or suspect a disability and need accommodations, you should contact [The Center for Accommodations and Support Services \(CASS\)](#) at 747-5148. You can also email the office at cass@utep.edu or go by the Union Building East, Room 106. For additional information, visit the CASS website at <http://sa.utep.edu/cass/> it is the responsibility of the student to notify the instructor that CASS accommodation guidelines are needed

Cell Phones: All cell phones should be TURNED OFF during class period. Use of cell phone is not allowed during lecture.

Lap Tops: Surfing the internet or e-mail during lecture is strictly forbidden. If the student is found using his/her computer other than for taking notes and updating class materials, she or he will be asked to leave the classroom and won’t be allowed to bring the computer again.

Lecture Materials: All lecture power points, additional cases, study questions and supplemented materials will be posted in blackboard. It is responsibility of the student to download the materials. **It is highly recommended that the students print power points to supplement them with additional information given in lecture.**

UNANNOUNCED QUIZZES AND ASSIGNMENTS:

Tickets to Class and unannounced quizzes will be given throughout the course and will constitute 15% of the final grade. There are no make-up exams or quizzes. **Late assignments will not be accepted** and student will receive a grade of zero (0%) for that assignment.



This is the “Ticket to Class” You will need one each time class meets. You will not be allowed to enter the class without a ticket unless you have a “free” day. The tickets are posted on Blackboard and you are responsible for downloading them and completing the assignment.

STATEMENT ON HARRASSMENT

Harassment:

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

[NON-DISCRIMINATION STATEMENT](#)

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. Ryan C. Holmes, Deputy Title IX Coordinator (Investigation of concerns related to Students)

915.747.8694 rholmes@utep.edu

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

915.747.5648 cmandalis@utep.edu

Related Resources

- Center Against Family Violence Hopelines: **915.593.7300 or 1.800.727.0511**
- El Paso Police Department (**911**) or UTEP Police Department (**747-5611**).
- For suspected harm of children or older persons, Child/Adult Protective Services **1-800-252-5400**.
- National Domestic Violence Hotline **1-800-799-SAFE (7233)**.

[STUDENT SUPPORT SERVICES STATEMENT](#)

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**

Cognitive Objectives

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

1. Describe the various quality control procedures performed in a transfusion service laboratory and to comprehend the importance of quality control and quality assurance.
2. Identify the major blood group antigens and antibodies and their particular specificities and sensitivities.
3. Understand the significance of human blood group antigens and antibodies in relation to blood transfusion and the well being of the patient.
4. Characterize the genetic principles governing the inheritance of blood group and HLA antigens.
5. Describe the protective techniques and safety practices utilized in the transfusion service laboratory and fathom the consequences for not following such techniques and practices.
6. Describe and explain the theory involved in donor selection criteria, approved blood collection procedures, compatibility testing, component preparation, and transfusion therapy procedures.
7. Depict the hazards of blood transfusion and the test performed on units of blood.
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.

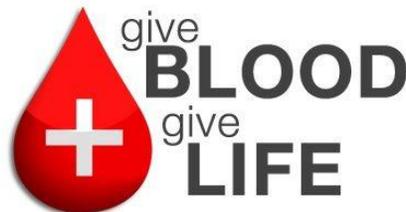
Objectives: To show the appropriate responsible behaviors, students will demonstrate:

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.



NEW NAME for United Blood Services

Blood Bank Tentative Course Schedule

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

JAN 23	Basic genetics /Basic immunology/ Antiglobulin test
JAN 28	Basic genetics /Basic immunology/ Antiglobulin test
JAN 30	Basic genetics /Basic immunology/ Antiglobulin test
FEB 4	ABO blood group system
FEB 6	ABO blood group system /ABO antibodies
FEB 11	ABO blood group system /ABO antibodies Lectins/ABO Discrepancies
FEB 13	EXAM I

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

FEB 18	Rh Blood group system
FEB 20	Rh Blood group system Lewis/MNSs/P/I
FEB 25	Rh Blood group system Lewis/MNSs/P/I
FEB 27	ABO/RH Exam II

Major blood group systems (Chapters 9 – 10)

MAR 4	Lewis/MNSs/P/I
MAR 6	Kell/Kidd/Duffy/Lutheran
MAR 11	Kell/Kidd/Duffy/Lutheran
MAR 13	Kell/Kidd/Duffy/Lutheran/Miscellaneous systems
MAR 18, 20	SPRING BREK
MAR 25	Detection and Identification of Antibodies
MAR 27	EXAM III - Cold and Warm antibodies

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

APR 1	Detection and Identification of Antibodies
APR 3	Detection and Identification of Antibodies
APR 8	Pretransfusion testing – compatibility
APR 10	Pretransfusion testing – compatibility
APR 15	Donor screening and Component Preparation
APR 17	Transfusion Therapy, Aphaeresis, Transplantation
APR 22	Adverse effects of Blood Transfusion
APR 24	EXAM IV

HDN, Relationship, AIHA, Stem Cell, and miscellaneous, (Chapters 14, 20, 21, 23, 24)

APR 29	Transfusion-Transmitted Diseases
MAY 1	HDN and Autoimmune Hemolytic Anemia
MAY 6	Relationship testing, HLA TESTING
MAY 8	EXAM V

MAY 13 COMPREHENSIVE FINAL 9-12