

**The University of Texas at El Paso**  
**College of Health Sciences**  
**Clinical Laboratory Science Program**  
**CLSC 3351 Concepts in Immunodiagnostics**



**Course:** CLSC 3351 Concepts in Immunodiagnostics  
Summer I: June 8 – July 6, 2020  
On-line asynchronous

**Instructor:** M. Lorraine Torres, Ed.D, MT(ASCP)

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Here is the link to the technology support center in case you are having any difficulty with technology [UTEP Technology Support Help Desk](#)

**Virtual Office Hours:** 10:00 – 11:00 a.m. via blackboard. You can also set up a meeting via e-mail. 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. The best time to reach me is during my office hours. I will not be available after 11:00 as I will be setting up and teaching labs beginning at 11:00.

**Welcome to the UTEP Clinical Laboratory Science Program**

Clinical Laboratory Sciences is a profession that serves as a vital partner in clinical diagnosis and medical decision-making. Clinical laboratory scientists perform laboratory analyses to diagnose, treat, and monitor disease, and to evaluate the maintenance of an individual's health. These healthcare professionals are experts in the scientific disciplines of clinical chemistry, hematology, immunology, immunohematology, and microbiology.

**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.**

**Course Description:**

This course covers basic clinical laboratory immunology and applications in laboratory medicine. Interactions among immune cells and their secretions are examined. The role of the immune system in tumor growth, transplantation and rejection, and autoimmune diseases is covered. Various methods utilized in the clinical laboratory are demonstrated and discussed. This course includes the principles and practices of quality control and pre-analytical, analytical, and post analytical components of clinical immunology. Immunology as a science has expanded dramatically and the use of immunologic procedures are currently across disciplines. Applications of immunologic procedures are used for the detection of infectious agents, autoimmune disorders, blood grouping and compatibility, and in molecular diagnostics, to name a few areas.

**Course Goal:**

At the end of this course, the student will develop a strong foundation of the basic principles of immunity and the human immune system. In addition, clinical applications will be discussed including principles and practices of quality control and pre-analytical, analytical, and post analytical components of clinical immunology.

**Affective Objectives**

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

1. A positive attitude by being prepared for lecture 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.
4. Stability and self-confidence by approaching and performing routine tasks confidently without assistance and maintaining composure.
5. Appropriate interpersonal skills by cooperating and communicating effectively with classmates and instructors and displaying courteous, considerate behavior and appropriate appearance.
6. Ethical behavior and integrity adhering to safety policies and abiding by all rules and regulations of the institution

**Cognitive Objectives**

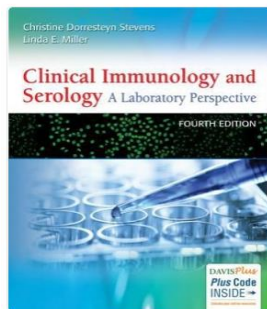
Upon completion of this course, the student should be able to:

1. Differentiate innate vs. Adaptive (acquired) immunity
2. Explain the concept of specificity and memory on the adaptive immune response
3. Explain how the field of immunology has progressed over the past century
4. Describe how physical and chemical barriers can function as an effective defense mechanism
5. Discuss the functions of the phagocytes and other cells involved in killing
6. Explain how complement enhances phagocytosis
7. List the classical signs of inflammation
8. Describe the functions of the lymphoid organs
9. Describe the process of B cell maturation
10. Illustrate the structure of an immunoglobulin

11. Discuss the rearrangement of immunoglobulin (Ig) genes and the relationship to production of Ig
12. Compare and contrast the function and structure of each Ig classes
13. Explain the role of the normal flora
14. Differentiate true pathogens from opportunistic pathogens
15. Compare and contrast the classical and alternate complement (C) pathways
16. List each of the C components
17. Define hypersensitivity
18. Differentiate between immediate and delayed hypersensitivity
19. Discuss the immunologic mechanisms underlying each type of hypersensitivity
20. Describe the RIST and RAST tests
21. Describe the principle of the following methods: precipitation, particle agglutination, immunofluorescent, EIA, direct FA,
22. Differentiate between organ specific and systemic autoimmune diseases
23. Differentiate between primary and secondary immunodeficiencies
24. Identify the genetic components of the major histocompatibility testing
25. Relate the elements in transplant rejection
26. Explain the theory of standard flow cytometric instrumentation
27. Determine the advantages and limitations of flow cytometry
28. Discuss principles and practices of quality control and pre-analytical, analytical, and post analytical components of clinical immunology.

**Required Texts: *These textbooks will also be used in the Serology class in the Fall semester***

Here is the link to the [UTEP Bookstore](#)



**ISBN:** 0803644663  
**ISBN-13:** 9780803644663  
**Authors:** Christine Dorresteyn Stevens, Linda E Miller



**Clinical Laboratory Science Review: A Bottom Line Approach**

by: Patsy Jarreau

**ISBN 13:** 9780967043432

**ISBN 10:** 0967043433

**Edition:** 5th

**Format:** Paperback

**Copyright:** 01/01/2015

**Publisher:** Matthews Medical Books

Stevens, C.D. and Miller, L.E. (2017). Clinical immunology and Serology: A Laboratory Perspective. 4<sup>th</sup> ed. F.A., David. Philadelphia, PA.

Jarreau, P. (2015). Clinical Laboratory Science Review a bottom line approach. 5<sup>th</sup> ed. Louisiana State University Health Sciences Center Foundation. New Orleans, LA.

## 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](#).

## Netiquette: [10 Rules of Netiquette for Students](#).

The rules for online learning and classroom learning are virtually the same: You have to study, take notes, attend classes and participate in discussions. In the classroom, your words, gestures, posture and facial expressions communicate your thoughts and observations to your classmates and teachers. But how do you express yourself online, where the written word is all they see?

During your online CLS classes, you will frequently be asked to participate in online discussions and will occasionally do peer reviews of your classmates' work. Here are 10 rules of netiquette that will help you successfully communicate as you learn online.

1. **Make sure identification is clear in all communications.** Begin with a salutation (“Hi, Jason!”) and end with your signature (“Hannah Kay, CLS Immunology class”).
2. **Review what you wrote and try to interpret it objectively.** When we speak face to face and are misunderstood, we have an on-the-spot opportunity to rephrase our words. In writing, we must strive twice as hard to be understood, as we do not have the benefit of modifying or elaborating in real time. All caps (“I’M SHOUTING”) and exclamation points (“Give me a break!!!”) can be misinterpreted as intense anger or humor without the appropriate context.
3. **If you wouldn’t say it face to face, don’t say it online.** When you’re working online, you’re safe behind a screen, but that’s no excuse to be ill-mannered or say things you would never say in public.
4. **Don’t assume everyone understands where you’re coming from.** Sarcasm and wit is often the spice of in-person conversation, but in online discussion, it can not only lose its edge, it can bite! In your high school classroom, all students were the same age, came from similar backgrounds and lived in the same area. In contrast, your online classroom is made up of people of all ages and cultures who have varied backgrounds, lifestyles and geographic locations. With this in mind, review what you wrote before contributing to the conversation and ask yourself, “Will *everyone* get the joke?”
5. **Don’t spam.** Please don’t take advantage of your connection with the other students in your online classroom to forward emails and links regarding your political/spiritual beliefs or to sell your services.

6. **Use emoticons.** In casual chatroom settings, emoticons can help convey feelings that may otherwise get lost in translation, including humor, exasperation, exhaustion and even confusion.
7. **Respect others' privacy.** Don't give out another student's personal email address without permission.
8. **Remember, if it's on the internet, it's everywhere.** Don't share personal information about yourself in a public online forum, especially something that could put your safety or security at risk.
9. **Follow the rules.** Just as your online college posts guidelines related to [academic integrity and student expectations](#), online forums also have rules of conduct. Make a point to read them every time, as they can vary from class to class.
10. **Forgive and forget.** If you're offended by something another student says online, keep in mind that you may have misunderstood their intentions. Give them the benefit of the doubt.

### **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 work with the [UTEP Center for Accommodations and Support Services](#) BEFORE class. Accommodations are NOT given after the fact.

### **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: [HOOP: Student Conduct and Discipline](#).

## Student Resources

UTEP provides a variety of student services and support:

- [UTEP Library](#): Access a wide range of resources including online, full-text access to thousands of journals and eBooks plus reference service and librarian assistance for enrolled students.
- [Help Desk](#): Students experiencing technological challenges (email, Blackboard, software, etc.) can submit a ticket to the UTEP Helpdesk for assistance. Contact the Helpdesk via phone, email, chat, website, or in person if on campus.
- [University Writing Center \(UWC\)](#): Submit papers here for assistance with writing style and formatting, ask a tutor for help and explore other writing resources.
- [Math Tutoring Center \(MaRCS\)](#): Ask a tutor for help and explore other available math resources.
- [History Tutoring Center \(HTC\)](#): Receive assistance with writing history papers, get help from a tutor and explore other history resources.
- [Military Student Success Center](#): UTEP welcomes military-affiliated students to its degree programs, and the Military Student Success Center and its dedicated staff (many of whom are veterans and students themselves) are here to help personnel in any branch of service to reach their educational goals.
- [RefWorks](#): A bibliographic citation tool; check out the RefWorks tutorial and Fact Sheet and Quick-Start Guide.

## TIME NEEDED TO STUDY!

ON AVERAGE, YOU NEED TO READ A MINIMUM OF ONE CHAPTER PER DAY. LOOK AT THE **TENTATIVE** COURSE SCHEDULE AND READ THAT CHAPTER TO BE COVERED BEFORE REVIEWING THE POWER POINTS. AFTER REVIEWING THE POWER POINTS, RE-READ THE CHAPTER WHILE TAKING NOTES ALONG SIDE YOUR POWER POINT PRESENTATIONS.

## Test Policy:

There will be three hourly examinations and a comprehensive final. The lecture exams may include brief essay questions and case studies. If you cannot log on to an exam for a legitimate reason, (death, illness etc. with documentation) inform the instructor as soon as possible and the instructor will arrange a new time. 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.

## Grading:

Hourly 60 % (3 exams)  
Final exam 33%  
Assignments / ticket to class 7%  
(Late assignments will not be accepted)

## Grade Scale:

90 – 100 = A  
80 – 89 = B  
75-79 = C  
74.9 – 70 = D  
69 & below = F

**All exams will be given on-line using Respondus lock down. You will need a computer with webcam. If you do not have a webcam you will need to get one before the first exam. You will not be allowed to take the test without the webcam.** Phones may not be used as a calculator. Programmable calculators are not to be used in the CLS Program, only basic calculators will be allowed.

**Some hints on how to succeed in this course** (and probably in other courses also)

It is essential to develop good study skills in order to succeed in any course you take.

Good study skills not only save you time and energy, but also help you learn more effectively.

Four study skills that will promote your learning are:

- Self-management
- Making useful notes
- Reading to learn
- Studying with others – if that is your learning style

### **Self-management techniques**

*“If you don’t know where you’re going you could wind up someplace else”* Yogi Berra

It is critical that you will manage your time wisely. Organize yourself by planning a schedule. In this schedule, you may want to record time for reading, reviewing and studying for tests. Adjust your schedule as the course progresses. Use a study location free of distractions and review periodically.

### **Making useful notes**

Identify new ideas, summarize main ideas from lecture or text, create outlines, flow charts, trees, concepts; underline selectively and rewrite your notes.

### **Reading to learn**

Determine your purpose for reading; preview the text (titles, summaries, diagrams); turn titles and headings into questions; read for main ideas; re-read, visualize, relate; review.

### **Study with others**

Study groups are one of the best ways of learning. Review the subject, formulate questions and discuss main ideas. Test each other for knowledge. Explain what you have learned to others. If you can explain clearly the material, you have learned then you can be sure you know your material well.

# **Tentative Schedule on Next Page**

## Tentative Schedule

**Note: Chapters not specifically covered in this course will be covered in CLSC 3260/3161 (Serology). Chapter 12 will be covered in CLSC 4210/4111.**

### Nature of the Immune System

June 8 Syllabus Introduction to immunology. Chapter 1  
June 9 Nature of antigens and the MHC: Chapter 2,  
June 10 Innate immunity: chapter 3,  
June 11 Adaptive Immunity: chapter 4,  
June 12 Adaptive Immunity: chapter 5

### **June 15 EXAM 1 chapters 1 – 4 coloring assignments due**

June 16 Antibody Structure and Function: chapter 5  
June 17 Cytokines: Chapters 6,  
June 18 Complement: Chapter 7  
June 19 Safety and Quality Management Chapter 8

**Introduction to Immunologic procedures (Detail to be covered in Serology course (chapter 10, 11) and lab; chapter 8 to be covered in serology laboratory, Chapter 12 was discussed in CLSC 4210)**

### **June 22 Exam 2: Chapters 5, 6, 7, 8 (comprehensive chapters 1 – 4)**

June 23 Chapters 9 (make sure you know dilutions) , 10, 11, Intro to these chapters  
**NOTE: chapter 12 was covered in Molecular Diagnostic class and you will be given some questions over this chapter as a review.**  
June 24 Flow cytometry: chapter 13 **Make sure you know this chapter**  
**Intro to Immune Disorders: (specifics on technique in Serology class)**  
June 25 Hypersensitivity: Chapter 14,  
June 26 Autoimmunity: Chapter 15,  
Drop / Withdrawl deadline

### **JUNE 29 Exam 3 Chapters 9 -15 (comprehensive chapters 1 – 15)**

June 30 Transplant Immunology: Chapter 16  
July 1 Tumor Immunology: Chapter 17  
July 2 Immunoproliferative diseases: Chapter 18  
July 3 Immunodeficiency diseases: Chapter 19

### **July 6 Final: will be comprehensive but will focus more on chapters 16 – 19**