CONTEMPORARY TOPICS IN BIOLOGY – BIOL 4005.006 – SPRING 2026
LANG 323 – M/W/F 1-1:50pm

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Office Hours: Wednesday/Friday 12 noon - 1pm or by appointment (LSC B 116)

HOW TO CONTACT ME
Email is the **best way** to reach me. I typically respond to emails within **48 hours on weekdays**. If your question requires a detailed discussion, please come to my office during **scheduled office hours**. If you are unable to attend during regular office hours, you may **request an appointment** via email. Keep in mind that other students may also be waiting to meet with me, so scheduling ahead will help ensure that we have sufficient time for your questions.

COURSE DESCRIPTION
This course provides a foundational and clinically oriented introduction to the mammalian immune system, emphasizing concepts essential for students pursuing careers in the medical laboratory sciences, healthcare, and related biomedical fields. Students will explore the organization of immune tissues and microenvironments; the cells and molecular mechanisms that drive innate and adaptive immunity; and the processes by which the immune system recognizes, responds to, and eliminates pathogens.

Key topics include antigen recognition, the genetic basis of lymphocyte receptors, antigen processing and presentation, and the development and activation of T and B lymphocytes. The course also examines antibody-mediated and cell-mediated effector functions and how these responses manifest in laboratory results.

Applied and clinical modules will cover hypersensitivity reactions, autoimmunity, chronic inflammation, transplantation immunology, immunodeficiency disorders, cancer immunology, and immunization strategies. A consistent focus throughout the semester will be on connecting immune mechanisms to diagnostic testing, clinical decision-making, and interpretation of laboratory data, enabling students to understand how immunology underpins modern clinical laboratory practice.

COURSE OBJECTIVES / LEARNING OUTCOMES
By the end of this course, students will be able to:
1. Describe the anatomy and organization of the immune system, including major immune cells, tissues, and microenvironments relevant to clinical testing.
2. Differentiate between innate and adaptive immune mechanisms, and explain how abnormalities in either branch present clinically and in laboratory results.
3. Explain the molecular basis of antigen recognition, including the structure, genetics, and diversity of antigen receptors, and relate these concepts to serology and diagnostic immunoassays.
4. Outline T-cell and B-cell development, activation, differentiation, and memory formation, and relate these processes to lymphocyte profiles observed in laboratory settings.
5. Analyze antibody- and cell-mediated effector responses, including their timing during infection and their relevance to interpreting immune markers, antibody titers, and functional assays.
6. Discuss the immunological basis of hypersensitivity reactions, chronic inflammation, autoimmunity, and transplantation, emphasizing diagnostic markers and laboratory evaluation.
7. Evaluate immunization and vaccination strategies, and interpret serologic evidence of immunity, vaccine response, and waning immunity.
8. Explain the immune response to cancer, including mechanisms of immune evasion and the principles behind immunodiagnostics and immunotherapies.

COURSE MODALITY & MATERIALS
Modality
This course will be delivered through **face-to-face lectures** held **three times a week**, with each session lasting **50 minutes**. Class time will include a mix of lectures, interactive discussions, and in-class activities designed to reinforce key concepts.

Required/recommended textbook
There is **no required textbook** for this course. However, you are strongly encouraged to obtain a reliable immunology reference book to support your learning and provide additional context for lecture material.

Canvas
All **lecture slides, announcements, assignments, and grades** will be posted on **Canvas**. You are expected to check Canvas **daily** for updates, as important course information will be communicated through this platform.

iClicker
Engagement, participation, and interaction in class are essential components of the learning process and will count toward your final grade. This course will use **iClicker**; therefore, each student must be registered and have a compatible device (computer, smartphone, or tablet) available for polling during class.
You may participate using:
- The **iClicker Student App** (iOS/Android)
- The **iClicker Website** (iclicker.com)
- An **iClicker Device**

When setting up your account, select **University of North Texas** as your institution and enter your **EUID** (Canvas login ID) in the *Student ID* field. Add this course to your list; it will appear each time you log in. Join the session at the start of class—connecting to UNT Wi-Fi is recommended.
Your iClicker participation counts toward your engagement grade. If you miss class, you miss that day's points; no make-ups will be given except in approved circumstances.

iClicker is to be used only for your own participation while present in class. Submitting responses for another student, having someone respond for you, or answering when absent is considered academic dishonesty and will be treated accordingly.

CLASS POLICIES:
All students in the course are expected to know and follow these course policies. These policies are in place to ensure a respectful, fair, and productive learning environment.

Attendance
- Attendance will be recorded during each class session, and students will receive points for being present.
- **Makeup work** will only be provided for **University-Excused Absences** and must be arranged in advance whenever possible.
- Students with medical absences must provide **official documentation within one week** of the absence. Requests will be reviewed on a case-by-case basis.

Classroom Conduct
- **Cell phones and other electronic devices** must be silenced during class.
- Laptops, tablets, or phones used for note-taking or iClicker participation must be used **only for class purposes**.
- Be respectful of your classmates' ability to learn and your instructor's ability to teach. Disruptive behavior will not be tolerated.

Late Work
- **Late work will not be accepted**. All due dates are clearly posted on Canvas, plan ahead to meet deadlines.

- If you encounter **technical problems**, contact me **immediately** and **before** the deadline.

Exams
- Arrive at least **5 minutes before** the scheduled start time as students arriving late may not be allowed to take the exam.
- Once you begin the exam, **you may not leave the room and return**.
- All exams will be **closed-book, closed-notes**, unless otherwise specified.

Academic Integrity
- Each student must work **independently** on all assignments unless specifically instructed otherwise.
- **Academic dishonesty**, including cheating, plagiarism, and the use of AI tools will not be tolerated.
- Students found in violation may receive **zero** on the assignment, and possible removal from the course and/or a report to the **Dean of Students Office**.
- If you are found to have plagiarized or used AI, you will also be **ineligible for extra credit** for the remainder of the semester.

HOW TO SUCCEED IN THIS COURSE

Success in this course depends on consistent engagement and active participation. Because immunology is cumulative, each topic builds upon concepts introduced earlier, missing even one lecture can make later material more challenging to grasp. To give yourself the best chance of success:
- Attend every class
- Review lecture slides before class and take detailed notes during the lecture.
- Ask questions during class or email me if something is unclear.
- Study regularly
- Use office hours
- Form study groups

ASSESSMENT & GRADING

Your final course grade will be based on a total of **500 points**, distributed as follows:
- **Exam 1** – 100 points
- **Exam 2** – 100 points
- **Exam 3** – 100 points
- **Exam 4** – 100 points *(given during the university-assigned Final Exam time)*
- **Weekly Quizzes** – 80 points
- **Attendance & Participation** – 20 points

Total Possible Points: 500

All **exams will consist of multiple-choice questions (MCQs)**. Exams 1–4 will be non-cumulative, and the content covered will be announced prior to each exam. After completing Exam 4, students will have the option to take an **optional cumulative exam** during the remaining time. If taken, the score on this optional exam may be used to replace the lowest score from Exams 1, 2, 3, or 4.

Weekly quizzes and attendance/participation play an important role in determining your final grade, and students who do not engage consistently in these components typically do not earn strong final grades.

Extra Credit Opportunities
Students may choose to participate in additional approved activities for extra points toward their final grade. These activities are optional and will be announced in class and/or on Canvas.

GRADE IN COURSE:

Points	Percentage	Letter grade assigned
450+	90%+	A
400-449	80-89.9%	B
350-399	70-79.9%	C
300-349	60-69.9%	D
<299	<60%	F

DISABILITIES ACCOMMODATION

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with an accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request accommodations at any time; however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information see the Office of Disability Accommodation website at http://www.unt.edu/oda. You may also contact them by phone at 940-565-4323.

EAGLE ALERT & CALENDAR CHANGE STATEMENT

If UNT closes due to weather or emergency, you will be notified through Eagle Alert. The course schedule is subject to change.

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COURSE SCHEDULE

Theme 1: Foundations of Immunology & Innate Defense
- **Lecture 1:** Introduction & Overview of the Immune System
- **Lecture 2:** Antigens, Antibodies, and Immune Recognition
- **Lecture 3:** Immune Cells, Tissues, and Organs
- **Lecture 4:** Innate Immunity and Inflammation
- **Lecture 5:** Complement Pathways
- **Lecture 6:** Cytokines and Chemokines

Theme 2: Adaptive Immunity
- **Lecture 7:** The Major Histocompatibility Complex (MHC) and Antigen Presentation
- **Lecture 8:** The Organization and Expression of Lymphocyte Receptor Genes
- **Lecture 9:** T and B Cell Development
- **Lecture 10:** T and B Cell Activation
- **Lecture 11:** Effector Immune Responses
- **Lecture 12:** Immune Memory and Vaccination

Theme 3: Applied and Clinical Immunology
- **Lecture 13:** Hypersensitivity Reactions
- **Lecture 14:** Tolerance and Autoimmunity
- **Lecture 15:** Transplantation Immunology
- **Lecture 16:** Immunodeficiency Diseases

- **Lecture 17:** Cancer and the Immune System

EXAM DATES
- **Exam 1:** February 6th, 2026
- **Exam 2:** March 6th, 2026
- **Exam 3:** April 3rd, 2026
- **Exam 4:** TBD
- **Exam 5 (Optional):** Immediately after exam 4

Note that the dates for exams 1-3 are tentative and may shift