

**IBMS 6323 Immune Cell Biology and Human Immunology Credit Hours: 3**

**Semester:** Fall **Year:** 2026  
**Class Day/Time:** Monday 9:00 am -12:00 pm **Class Location:** TBD

**Instructor of Record:** Dr. Buka Samten

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Office Hours: 9:00 am - 5:00 pm

**Course Description:** As an essential part of our body, the immune system plays critical roles in protection against infection, cancer and maintenance of the homeostasis of the body. To do that, the immune system must recognize and distinguish between foreign (invading infectious agents) and self (the body cells and tissues) and respond to only the foreign invaders for clearance. Therefore, this doctoral-level course will cover the central concepts of the immune system, humoral & cell-mediated immunity responses, associated diseases and treatments involving immunization, infection immunity, cancer immunity, immunodeficiency, and autoimmunity.

**Prerequisite:** None

**Co-requisite:** None

**Goals of Course:**

The main objective of this course is to examine the basic principles of system and study the tissues and cells that make up the immune system and their interactions at the cellular and molecular levels for the recognition of foreign versus self and for the proper execution of immune cell functions against invading pathogenic organisms and pathological conditions which lead to tissue damage and disease conditions. And to study the molecular and cellular interactions and principles of how immune cells respond to invading microorganisms while maintaining homeostasis the immune system. Understand the mechanistic details of the failures of immune function, such as immune deficiencies, autoimmunity, and cancer development.

**Student Learning Outcomes (SLO or “course objectives”):**

1. The students can describe the main characteristics of the various immune tissues and immune cells of the human and mouse immune system and their functions in controlled immune responses against invading microorganisms
2. The students can understand and describe the differences between innate and adaptive immune cells and their interactions at the molecular level for the successful generation of protective immune responses against bacterial and viral infections, associated pathogenesis of human diseases and tissue homeostasis.
3. The students can describe major techniques used in and influenced by immunology and their potential applications in biomedical research.
4. The students develop skills with oral and written scientific communications
5. Learn how to find and critically evaluate primary and secondary literature sources in the areas of immunology and related topics.

**Course Assessment/Methods of Evaluation:**

Student understanding of main immunological concepts and principles will be evaluated with comprehensive examinations of a purely subjective nature covering each topic in detail, evaluations of quizzes, participation in class literature discussions, and creation of mini-

research proposals. Students who successfully complete the course will demonstrate a thorough understanding of fundamental knowledge of initiation and regulation of immune responses and their roles in maintenance of body homeostasis in physiological conditions and disease developments, principles of vaccination and autoimmunity.

- **Quizzes:** There may be short in-class quizzes. The specific lecturers will determine the grade worth of these quizzes. These grades will be taken into consideration using pre-assigned weightage in determining the final grade.
- **Lecture and small group discussion:** Class is composed of formal lecture and small group discussion. Students need to critically read the assigned original research article that is given one week prior to the class. The articles are discussed in class, and the students are expected to lead the in class discussion.
- **Proposal for mini-research project.** Students are expected to submit two written mini-research proposals that are presented in class using power point presentation which account for **60%** of the grade.  
Submit two written mini projects by November 2, at 5:00 pm.  
Each mini project should contain following: Title, Background/Significance (max one page); Hypothesis; Research strategy and proposed experiments (One Specific Aim that may contain multiple sub-aims; may include figures). Total 3 pages per each mini project (Single space, arial 11, AHA Margin), References (additional pages)

Presentation: A student performs PPT presentation of the proposed project (20 min presentation and 60 min discussion)

- **All documents must be typed, and handwritten documents are not acceptable.**
- **Class Participation and Attendance: Punctual attendance and participation in group discussion and presentation are critical. It is critical to sign (legibly) the sign-up sheet for each class to record your attendance. Students are expected to be in attendance for the majority of the class time. If not, students will not get full credit for attendance. Tardiness of more than 30 min may not get full credit. (Attendance and paper presentation/discussion are 20% of grade, respectively)**
- A grade of less than a B may result in loss of Graduate Assistantships.
- No grades will be withheld for completion of work except in extreme circumstances.  
**Work such as mini-project proposal and other assignments turned in late will lose 5% (1 day late), 10% (2-3 days late), and 20% (4-7) of the possible points. More than 7 days late will lose 100% of the points.**

#### **Linked Program Learning Outcomes:**

The student learning outcomes listed above address the following Integrated Biomedical Sciences Program PLO domains:

PLO1 - Core Knowledge domain  
PLO2 - Research Methods and Analysis domain  
PLO3 - Scholarly domain  
PLO4 - Professionalism domain

#### **Course Content:**

This course will discuss following subjects in immunology:

Immune cell types and their functions  
 Innate immunity  
 Adaptive immunity  
 MHC molecules and antigen presentation  
 Tumor immunology  
 Bacterial infection and immunology  
 Viral infection and immunology  
 Vaccine development  
 Advanced immunological techniques and immunotherapy

## Course Schedule:

|                         |                                                           |
|-------------------------|-----------------------------------------------------------|
| August 24 (Monday)      | Overview of Immunology (Samten)                           |
| August 31 (Monday)      | Innate Immunity (Samten)                                  |
| September 7 (Labor Day) | No Class                                                  |
| September 14 (Monday)   | Tumor Immunology (Samten)                                 |
| September 21 (Monday)   | Bacterial Infection and Immune Responses (Samten)         |
| September 28 (Monday)   | MHC molecules and antigen presentation (Tvinnereim)       |
| October 05 (Monday)     | Adaptive Immunity I (Tvinnereim)                          |
| October 12 (Monday)     | Adaptive Immunity II (Tvinnereim)                         |
| October 19 (Monday)     | Viral Infection and Immune Responses (Tang)               |
| October 26 (Monday)     | Vaccine Development (Yi)                                  |
| November 02 (Monday)    | Advanced Immunological Techniques and Immune Therapy (Yi) |
| November 09 (Monday)    | Mini-project Presentation 1 and 2                         |
| November 16 (Monday)    | Mini-project Presentation 3 and 4                         |
| November 23 (Monday)    | (Thanksgiving week: no class)                             |
| November 30 (Monday)    | Mini-project Presentation 5 and 6                         |
| December 07 (Monday)    | Mini-project Presentation 7 and 8                         |

## Other Class Policies

### Attendance:

Regular or punctual attendance is expected. If a student misses a class or lab, the student is responsible for obtaining any information distributed during those times. Make-ups are possible only in certain instances (labs cannot be made up). Arrangements for any make-ups and/or missed labs should be discussed directly with the instructor for that day's class.

### Academic Honesty:

Any student who commits an act of scholastic dishonesty is subject to discipline. 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 designed to give unfair advantage to a student or the attempt to commit such acts.

### Cheating

Dishonesty of any kind involving examinations, assignments, alteration of records, wrongful possession of examinations, and unpermitted submission of duplicate papers for multiple classes or unauthorized use of keys to examinations is considered cheating. Cheating includes but is not limited to:

- Using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class.
- Falsifying or inventing any information, including citations, on an assigned exercise.
- Helping or attempting to help another in an act of cheating or plagiarism.

### Plagiarism

Plagiarism presents the words or ideas of another person as if they were your own. Materials, even ideas, borrowed from others necessitate full and complete acknowledgment of the original authors. Offering the work of another as one's own is plagiarism and is unacceptable in the academic community. A lack of adequate recognition constitutes plagiarism, whether it utilizes a few sentences, whole paragraphs, articles, books, audio-visual materials, or even the writing of a fellow student. In addition, the presentation of material gathered, assembled or formatted by others as one's own is also plagiarism. Because the university takes such misconduct very seriously, the student is urged to carefully read university policy [Sec. 8-802. Academic Dishonesty](#). Examples of plagiarism are:

- Submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another.
- Submitting a work that has been purchased or otherwise obtained from an Internet source or another source.
- Incorporating the words or ideas of an author into one's paper without giving the author due credit.

**AI (Artificial Intelligence) Policy:**

UT Tyler is committed to exploring and using artificial intelligence (AI) tools as appropriate for the discipline and task undertaken. We encourage discussing AI tools' ethical, societal, philosophical, and disciplinary implications. All uses of AI should be acknowledged as this aligns with our commitment to honor and integrity, as noted in UT Tyler's Honor Code. Faculty and students must not use protected information, data, or copyrighted materials when using any AI tool. Additionally, users should be aware that AI tools rely on predictive models to generate content that may appear correct but is sometimes shown to be incomplete, inaccurate, taken without attribution from other sources, and/or biased. Consequently, an AI tool should not be considered a substitute for traditional approaches to research. You are ultimately responsible for the quality and content of the information you submit. Misusing AI tools that violate the guidelines specified for this course (see below) is considered a breach of academic integrity. The student will be subject to disciplinary actions as outlined in UT Tyler's Academic Integrity Policy.

**Use of AI is not permitted in this course at all.**

To best support your learning, you must complete all graded assignments by yourself to assist in your learning. Doing your own work, without human or artificial intelligence assistance, is best for your efforts in mastering course learning objectives. This exclusion of other resources to help complete assignments includes artificial intelligence (AI). Refrain from using AI tools to generate any course context (e.g., text, video, audio, images, code, etc.) for any assignment or classroom assignment.

**Adding/Dropping:**

The official deadline for adding and dropping courses is published in the academic calendar ([Registrar Withdrawal webpage](#)). However, students are strongly encouraged to meet with their graduate advisor or the Program Coordinator prior to adding/dropping courses. Movement into and out of classes after the 4th class day requires approval of the Program Director. Each student is responsible for their own enrollment status with the university.

**Disability Accommodations:**

UT Tyler HSC abides by Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act, which mandate reasonable accommodations be provided for students with documented disabilities. If you have a disability and may require some type of instructional and/or examination accommodations, please contact me early in the semester so that I can provide or facilitate the provision of accommodations you may need. If you have not already done so, you will need to register with the Student Services Office (located on the main campus). You may call 903-566-7079 for more information.

**A listing and description of all student policies can be found here: [Manual of Policies and Procedures for Student Affairs](#).**