

Course Title: BIO 401C Immunobiology

Term: Fall 2022

Instructor: TBA

Course Credit: 4

Mode of Instruction: Online

Course Description:

Immunobiology is the study of the response of higher organisms to foreign substances and pathogens, such as bacteria and viruses. In this course, basic aspects of immunobiology will be studied with emphasizing immune response, antibody structure and reactions with antigens, immunological specificity, and immunological diseases. Focus will be placed on the organization and evolution of the immune system, and cellular and molecular mechanisms used by the immune system to protect organisms from both self and disease.

Course Prerequisites:

BIO 375 Infectious Disease

Learning Outcomes:

By the end of the course, the student should be able to:

- A. Comprehend and apply the diversity of the adaptive immune system;
- B. Gain deep understanding of a relevant research article and present it for the group;
- C. Improve the ability to analyze, present and critically discuss results of their experiments both in individual and teamwork activities;
- D. Carry out experiments using laboratory techniques and methods to apply concepts presented in lectures.

Course Material:

Jenni Punt, Sharon Stranford, Patricia Jones, Judith A Owen, Kuby, *Immunology*, Eighth Edition, W. H. Freeman, 2019.

Evaluation:

- 4 Lab Reports [40%]
- Essay [10%]
- Mid-term Exam [20%]
- Final Exam [30%]

Description of the Evaluation tasks:

Assignment/ Essay/ ... : During the term, students will be required to finish several evaluation tasks within due date. All the tasks are linked with specific course topics/outcomes and will adequately assess students' competence and learning outcomes. Students are encouraged to meet with instructor about these tasks at any point.

Mid-term/ Final Exams/ Quiz/... : There may be periodic quizzes given at the beginning of lecture sessions; the feedback from these quizzes will monitor the progress of the learners and help to set learning priorities. There will be mid-term exam/ final exam for the course. They are the basic criteria for the evaluation of students' learning outcomes and final grade.

Grading Policy:

Students are supposed to finish each online lecture. Prior to each class, students should

finish the required readings. During the class time, students are encouraged to make use of all relevant online course resources and communicate with the instructor. Students' grades are accumulated based on the cumulative evaluations.

Students' letter grade will be assigned according to the following scale:

A+ 90-100	A 85-89	A- 80-84
B+ 77-79	B 73-76	B- 70-72
C+ 67-69	C 63-66	C- 60-62
D+ 57-59	D 53-56	D- 50-52
F < 50		

Academic Integrity:

Students must strictly adhere to the university's academic integrity rule; and all essays, exams and any other form of academic assignments must adhere to these rules. Any form of plagiarism, cheating, or misappropriation of materials will be considered a violation of academic integrity and will be punishable by the university.

Withdrawal from the Course(s):

Students will be able to apply for a transfer or withdrawal within 3 days of the starting date of the course. If a withdrawal is applied for within 3 working days, the tuition fee will be fully refunded. After 3 days, the tuition fee will not be refunded. If a withdrawal is applied for in the first two weeks, it will be recorded as W (Withdraw) on the course transcript. After this initial two-week period, the class will be recorded as F (Fail).

Tentative Schedule:

Week 1

1	Course Introduction
2	The Immune System
3	Cells, Organs, and Microenvironments of the Immune System
4	Receptors and Signaling: B and T cell receptors
5	Receptors and Signaling: Cytokines and Chemokines Lab Report 1

Week 2

6	Innate Immunity
7	The Complement System
8	The Organization and Expression of Lymphocyte Receptor Genes
9	The Major Histocompatibility Complex and Antigen Presentation
10	T-Cell Development Lab Report 2

Week 3

11	B-Cell Development
12	T-Cell Activation, Differentiation, and Memory
13	Mid-term Exam
14	B-Cell Activation, Differentiation, and Memory
15	Effector Responses: Cell- and Antibody-Mediated Immunity Lab Report 3

Week 4

16	Mucosal Immunity and the Microbiome
17	The Immune Response in Time and Space
18	Allergy, Hypersensitivities, and Chronic Inflammation
19	Tolerance, Autoimmunity, and Transplantation
20	Infectious Diseases and Vaccines Immunodeficiency Disorders Lab Report 4

Week 5

21	Cancer and the Immune System
22	Immunosurveillance evasion
23	Experimental Methods and Systems
24	Students presentation Essay
25	Final Exam