

Course title: Theoretical Immunology

Credit (Theory): 2.5

Prerequisite: Microbiology

Department of Immunology, School of Dentistry- International Campus

First Semester of 2023 (1402-1403)

Schedule Time: Mondays 10-12, 13-15

Instructors: Doctors: Assarehzadegan, Delbandi, Falak, Khoshmirsafa, Mojtabavi, Safari

Course coordinator: Dr. Safari

Student responsibilities: Active participation in class, doing practice, multi-choice exam

Course Description: Introduces the principles of immunology including: development of the immune system, innate immunity, immunoglobulin structure and genetics, antigen-antibody reactions, the major histocompatibility complex reactions and antigen presentation, T cell receptors (genetics, structure, selection), T cell activation and effector functions, anergy and apoptosis, cytokines, phagocytic cell function, immune responses to infectious organisms and tumors, autoimmune diseases, autoimmunity, allergies, and immune deficiencies.

- Course objectives: The course aims to provide students with the basic knowledge about the functioning of the immune system, inflammation, immune response against infectious agents and against cancer, the causes and pathogenesis of major alterations in the immune response, vaccines, and immunotherapy.

Student Learning Objectives:

Know and understanding about:

1. Innate and Adaptive immunity
2. Cells and Tissues of the Immune System
3. Antigens & Antibodies
4. Antigen-Antibody reactions and their application in the diagnosis of diseases
5. Innate Immunity
6. Major Histocompatibility Complex molecules and Antigen Presentation to T cells
7. B cell Biology & Development
8. B cell activation & function
9. T cell Biology & Development
10. T cell activation & function
11. Immunity at Epithelial Barriers and in Immune Privileged Tissues
12. The Complement System
13. Immunologic Tolerance
14. Autoimmunity
15. Immunity to Microbes

16. Vaccine
17. Allergy
18. Hypersensitivity Disorders
19. Immunity to Tumors
20. Transplantation Immunology
21. Congenital Immunodeficiency
22. Acquired Immunodeficiency

Students are expected to:

Active Participation in Class, Doing practice

Course Plan

Date		Title	Teacher
Part 1: Basic Immunology			
9/25/2023	1402/7/3	1. Introduction to the Immune System: Innate and Adaptive immunity	Dr. Falak
9/25/2023	1402/7/3	2. Cells and Tissues of the Immune System	Dr. Mojtabavi
10/2/2023	1402/7/10	3. Antigens & Antibodies	Dr. Falak
10/2/2023	1402/7/10	4. Antigen-Antibody reactions and their application in the diagnosis of diseases	Dr. Khoshmirsafa
10/9/2023	1402/7/17	5. Innate Immunity	Dr. Delbandi
10/9/2023	1402/7/17	6. Major Histocompatibility Complex molecules and Antigen Presentation to T cells	Dr. Khoshmirsafa
10/16/2023	1402/7/24	7. B cell Biology & function	Dr. Delbandi
10/16/2023	1402/7/24	8. T cell Biology & Function	Dr. Safari
Midterm exam: 1402/8/22 or 11/13/2023			
10/23/2023	1402/8/1	9. The Complement System	Dr. Assarehzadegan
10/23/2023	1402/8/1	10. Immunity at Epithelial Barriers and in Immune Privileged Tissues	Dr. Jazayeri
10/30/2023	1402/8/8	11. Immunologic Tolerance	Dr. Mojtabavi
Part 2: Clinical Immunology			
10/30/2023	1402/8/8	12. Autoimmunity	Dr. Mojtabavi

11/6/2023	1402/8/15	13. Immunity to Microbes	Dr. Falak
11/6/2023	1402/8/15	14. Vaccine	Dr. Jazayeri
11/13/2023	1402/8/22	15. Allergy	Dr. Assarehzadegan
11/20/2023	1402/8/29	16. Hypersensitivity Disorders	Dr. Assarehzadegan
11/27/2023	1402/9/6	17. Immunity to Tumors	Dr. Safari
12/4/2023	1402/9/13	18. Immunohematology	Dr. Safari
12/11/2023	1402/9/20	19. Transplantation Immunology	Dr. Jazayeri
12/18/2023	1402/9/27	20. Congenital Immunodeficiency	Dr. Khoshmirsafa
12/25/2023	1402/10/4	21. Acquired Immunodeficiency	Dr. Khoshmirsafa
		Final Exam	

References:

1. **Basic Immunology: Functions and Disorders of the Immune System, 6th e. 2019** by Abul K. Abbas and Andrew H. H. Lichtman
2. **Cellular and Molecular Immunology, 10th e. 2021** by Abul K. Abbas and Andrew H. H. Lichtman