



9- Keywords	Immunity, Immune system, haemopoietic stem cell, Bone Marrow, Pathogen, Inflammation, Immune response, Humoral immunity, Cellular immunity, Innate immunity, Adaptive immunity, Antigen, Antibody.
10- Course Overview: The course aim to introduce basic theory and concepts of commonly used in immunology to give basic knowledge to understand what is immune system, knowing the main components of immune system and how it works generally against internal and external threats.	
11- Course Objective: Students will; - Understand the big image of immune system & how it works. - Know two different kind of immunity and how each of them recognizes the invader. - Learn cells and organs that make up the immune system. - Understand the major components of the immune system and how they work together to provide defense against pathogens. - Learn the structure and function of lymphatic system and how sense an infection in different part of body. - Learn about how white blood cells develop and able to distinguish between healthy cells and any kind of threats. - Learn how white blood cells provide a kind of “memory” for the immune system. - Know about signaling molecules which tell WBCs where to go and what to do during infection.	
12- Student's obligation 1-The student attention in all theoretical and practical lectures in academic year. 2-Completion of all tests. 3-Attendance in exams. 4- Participating in class discussion.	
13- Forms of Teaching - The main teaching method is standing on explain basic points on PowerPoint. - Sending animation videos about each subject to better understanding the process. - Using flash cards in the end of each lecture to remind and connected the information. - Asking challenging question in the start and end of the lecture to verify what percent of lecture is understood by students.	
14- Assessment scheme Final exam: 50 marks (20 theory, 30 practical) Midterm-exams: 50 marks (20 theory, 20 practical and 10 marks for activity& attendance)	
15- Student Learning Outcome: After the course, the student will be able to describe: - The basic principle of immune defense. - List of the most important components of both innate and adaptive immune system and how they interact in immune responses. - They also be able to understand the immune system and their interaction in general.	

16- Course Reading list and References:

- Kuby – immunology 6th edition
- Janeway's immunobiology 9th edition

17- The Topics

No	Lecture's titles (Theory)	Practical	2Hrs/Week
1	Introduction to basic concepts of immunology: -Why immune system? -Where is the immune system? -When does immune function start? -Who has an immune system?	Introduction of immunology lab techniques	4hr
2	Cells and organs of the immune system -Hematopoiesis -Cells of the immune -Primary lymphoid organ -Lymphatic system Describe blood-lymph circulation and lymphatics. -Secondary lymphoid organ	Immunoglobulin test	4hr
3	Innate immune system -physical components of innate immunity - cellular components of innate immunity - soluble components of innate immunity	Agglutination & precipitation	4hr
4	-What does innate immunity recognize? -Effector mechanism of innate immunity Inflammation Antiviral defense	Blood Typing	4hr
5	Complement system -Complement activation -Classical complement pathway -Alternate complement pathway -Infectious agents and products that activate complement. -Effects of complement on the immune system.	Combs test	4hr
6	Midterm	Midterm	-
7	Inflammatory system Cytokine	Helicobacter pylori	4hr

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8	Antibody basic structure and function Classification of antibody	Rheumatoid factor (RF)	4hr	
9	Antigen structure and action	HCG	4hr	
10	Adaptive immunity Adaptive immune system-properties and mechanism.	CRP	4hr	
11	Adaptive immune system -MHC and its role	Sexually transmitted diseases test	4hr	
12	Humoral immunity -How B lymphocyte cell activate? -How B lymphocyte cell proliferate? -How B cell differentiate? -long & short memory	Dilution process	4hr	
13	Cell mediated immunity - T cell activation - T lymphocyte classification & their role	ELISA (Demonstration only)	4hr	
14	Review	Review	4hr	
15	Final exam	Final	-	

18- Examinations:

Question Styles

Q1. What is phagocytosis?

Q2. True or False.

- a. Interferons activate natural killer cells and macrophages
- b. Leukocyte accumulation cause fever in inflammation

Q3. B cells mature in the..... while T cells mature in the

- a. Thymus/bone marrow and gut-associated lymphoid tissue (GALT)
- b. Spleen/bone marrow
- c. Bone marrow and GALT/thymus
- d. Liver/kidneys

Q4. Name cells of innate immune system.

Q5. B cells are activated by:

- a. Antibody
- b. Interferon
- c. Complement
- d. Antigen

19- Extra notes:

20-Peer Review

Signature