

First Semester

Credit hours:

Prerequisite:

Lectures:

**Instructor:**

Office #:

Office Hrs:

Zarqa University
Faculty of Allied Medical Sciences
Department of Medical Technology
Clinical Immunology (0701444)

Course description: The students will be introduced to the basic concepts of immunology and the biology of the immune cells, they will also learn the fundamentals of the immune tests and the basic of the immune research experiments in addition to the serological techniques and instrumentations. Immune disturbance consequences and diseases will also be covered.

Aims of the course: The course aims to provide students with a basic knowledge of the immune response and its involvement in health and disease. Provide the students with a comprehensive understanding of practical aspects of immunity including: immunization, and causes for immune response dysfunction.

Intended Learning Outcomes: (ILOs)**A. Knowledge and Understanding****A1. Concepts and Theories:**

- Familiarize students with basic concepts in immunology.
- Introduce students to the most important theories in immunology.
- Introduce to the students the different types of failures of the immune system.
- Present the difference between innate and adaptive immune responses.
- Introduce the basic concepts in T cell education, survival, and maturation.
- Familiarize the students with the different types of immunoglobulin and their functions.
- Perform and interpret the common laboratory techniques used in the Immunology Laboratory.

A2. Contemporary Trends, Problems and Research:

- Explain recent laboratory methods in diagnosis immunology-related disorders.
- Plan and undertake research in Clinical Immunology in the clinical laboratory and community.



A3. Professional Responsibility:

- Apply the knowledge from this course while working in medical laboratory to diagnose different immunological disorders.
- Apply quality control procedures in the lab.

B. Subject-specific skills

B1. Problem solving skills:

- Ability to analyze and solve problems related to immunological tests.
- Follow scientific procedure for solving problems in the lab. and make sure to apply quality control procedures in the lab.

B2. Modeling and Design:

- Connecting students with different sources of information and encourage students to solve many tasks during each chapter.
- Know how to access information about medical research.
- Perform information processing in the clinical laboratory

B3. Application of Methods and Tools:

- Understand different methods used in medical immunology and apply them in future while working in medical laboratory or research labs.
- Practice and apply some of these techniques in the practical part of the course.
- Correlate laboratory results to diagnosis of clinical conditions resulted from immunological disorders.

C. Critical-Thinking Skills

C1. Analytic skills:

- Interpret immunology test results to diagnose the cause of medical condition.
- Integrate the knowledge from this course to describe immunological disorders.
- Ability to analyze how an immunological disorder can affect the function of body and homeostasis.

C2. Strategic Thinking:

- Competent to understand and critically analyze the new literature in the field of immunology.
- Use a wide range of idea based on knowledge in this course to solve unexpected problems in the lab. and apply this way of thinking in different life situations.



C3.Creative thinking and innovation:

- Use a wide range of idea based on their knowledge in this course to suggest research method related to clinical immunology and apply that on different scientific fields.
- Create new and worthwhile ideas (both incremental and radical concepts).
- Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts.

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Communication:

- Begin to develop intellectual independence and foster a commitment to lifelong learning.
- Effectively communicate clearly and accurately about biological issues in both oral and written form.

D2.Teamwork and Leadership:

- Understand and demonstrate how to work as part of a team by working with a group in the lab. to perform experiment, analyze the data and submit report.

Course structures:

Week	Topic	ILOs	Teaching Procedure	Assessment methods
1	Introduction to the immune system	A3,B2,C1,D1	Lecture, oral inquiry, figures & practical class	Class participation, homework, and discussion
2	The organs of the immune system	A1,B2,C1,D1	Lecture, oral inquiry, figures & practical class	Class participation, homework, and discussion
	Basic concepts and components of the immune system	A1,B2,C3,D2	Lecture, oral inquiry, figures & practical class	Class participation, homework, and discussion
4	Innate immune system	A2,B3,C2,D2	Lecture, oral inquiry, figures & practical class	Class participation, homework, and discussion
5	Phagocytosis & Inflammation	A3,B1,C2,D1	Lecture, oral inquiry, figures & practical class	Class participation, homework, and discussion



6	Adaptive immune system	A2,B1,C 3,D2	Lecture, oral inquiry, figures & practical class	Class participation, homework, and discussion
7	Antigen and Immunogens	A3,B3,C 3,D2	Lecture, oral inquiry, figures & practical class	Class participation, homework, and discussion
8	Antibody structure and function	A2,B1,C 3,D2	Lecture, oral inquiry, figures & practical class	Class participation, homework, and discussion
9	Ag-Abs interaction (Immunoassay)	A3,B1,C 1,D1	Lecture, oral inquiry, figures & practical class	Class participation, homework, and discussion
10	Major Histocompatibility complex I & II	A2,B3,C 3,D1	Lecture, oral inquiry, figures & practical class	Class participation, homework, and discussion
	Antigen processing and presentation	A1,B3,C 2,D2	Lecture, oral inquiry, figures & practical class	Class participation, homework, and discussion
11	Activation and function of T lymphocytes	A1,B2,C 3,D1	Lecture, oral inquiry, figures & practical class	Class participation, homework, and discussion
	Activation and function of B lymphocytes	A2,B3,C 3,D2	Lecture, oral inquiry, figures & practical class	Class participation, homework, and discussion
12	Cytokines	A1,B2,C 3,D2	Lecture, oral inquiry, figures & practical class	Class participation, homework, and discussion
13	Complement pathways	A1,B2,C 3,D1	Lecture, oral inquiry, figures &	Class participation, homework, and



			practical class	discussion
14	Hypersensitivity reactions type I Hypersensitivity reactions type II	A3,B2,C3,D1	Lecture, oral inquiry, figures & practical class	Class participation, homework, and discussion
15	Hypersensitivity reactions type III Hypersensitivity reactions type IV	A2,B3,C1,D1	Lecture, oral inquiry, figures & practical class	Class participation, homework, and discussion
16	Tumor Immunology	A1,B2,C3,D2	Lecture, oral inquiry, figures & practical class	Class participation, homework, and discussion

References:

Main Textbook:

- Eli Benjamini, Richard Coico, Geoffrey Sunshine. Immunology A Short Course 4th edition.

Supplementary Textbook(s):

- Peakman, M., Vergani, D. 2009. Basic and Clinical Immunology (2nd Ed.). Churchill Livingstone, UK.
- Janeway and Travers 2nd edition
- Stites. Medical Immunology. 9th edition.
- University Library: the library in the university provides excellent electronic resources and databases that include research papers and book chapters. Please visit the university website/library page for more information.
- Internet: there are many websites that provide valuable data related to clinical immunology including research paper, books, animation, etc. You can find more of these by searching in the internet using a suitable searching key. Many websites will be posted on moodle during the semester.
- NCBI database: includes many textbooks that are available online FREE.
- Lecture Handouts.

Assessment Methods:



Methods	Grade	Date
First Exam	20 %	
Second Exam	20 %	
Final Exam	35 %	To be determined by the registration
Lab Midterm Exam	10%	
Lab Final Exam	15%	

