

University of Jordan
Faculty of Medicine
Department of Pathology, Microbiology and Forensic Medicine

Course Number: 0504206
Course Title: **Introduction to Medical Immunology**
Course weight: **2 credit hours (32 Lectures)**

Intended Learning Outcomes (ILO):

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

- Mention landmarks in the history of Immunology as a discipline of Medicine
- Describe the anatomy of the Immune system including the cells, tissues and organs that make up the system.
- List the types of an immune response, their components and their interactions.
- Distinguish between Immunogens, antigens and haptens, and mention their Biochemical and molecular characteristics.
- Describe Immunoglobulins from the standpoints of structure, functions and structural functional relationships.
- Explain the mechanisms of generation of diversity of immunoglobulins at the genetic and molecular levels.
- List the components of the complement system, describe the cascade of events in complement activation pathways, list the complement cleavage products and their biological functions and the regulatory mechanisms of complement activation.
- Describe the different types of antigen-antibody interactions, their characteristics and their use in diagnosis of disease and applications in research.
- Describe the pathways of T & B cell production, differentiation and maturation, their different subsets and their biological functions and interactions.
- Describe the structure and expression by different cells of the major histocompatibility complex, its functions particularly its role in the generation of an immune response.
- Mention the molecular and cellular events that take place between different cells in the generation of the different types of an immune response and the effector mechanisms activated and generated.
- Explain the concepts of tolerance and autoimmunity and mention the mechanisms involved in maintaining tolerance to self and abnormalities that lead to the break down of the state of tolerance leading to autoimmune diseases, their pathogenesis, types, characteristics, immunopathology and behavior.
- Discuss the principles of transplantations, graft rejection, types of rejection, donor recipient matching, promotion of graft survival and management of transplant recipients, and discussion of the common types of tissue and organ transplantation.
- Mention the principles of tumor immunology including the details of tumor antigens, host immune response to tumors, mechanisms of tumor escape from immune elimination, diagnostic tumor markers, tumor Immunotherapy and tumor vaccines.

- Mention the classification of allergy and hypersensitivity reactions, the mechanisms involved, clinical manifestations, disease categories, diagnosis and management.
- List the types of primary immunodeficiency disorders, the molecular defects underlining the different disorders, their clinical manifestations, diagnosis and management.
- Describe the immunologic principles that govern transfusion of blood and its components including red blood cell antigens, antibodies, transfusion reactions and their prevention and management.
- Mention the most common and important immune modulators used in management of disorders like those used in transplantation, autoimmunity, allergy and hypersensitivity or others.

LECTURES

| Day | Date | Topic |
|---------------|-------------|---|
| Week 1 | | |
| Sun | 10/6 | Introduction to Immunology |
| Mon | 11/6 | |
| Tue | 12/6 | Cells, Tissues and Organs of the Immune System |
| Wed | 13/6 | Immunogens, Antigens, and Haptens |
| Thu | 14/6 | Nonspecific Defense Mechanisms |
| Week 2 | | |
| Sun | 17/6 | Immunoglobulins: Structure |
| Mon | 18/6 | |
| Tue | 19/6 | Immunoglobulins: Biological Properties |
| Wed | 20/6 | Immunoglobulins: Generation of Diversity |
| Thu | 21/6 | Immunoglobulins: Generation of Diversity |
| Week 3 | | |
| Sun | 24/6 | The Complement System |
| Mon | 25/6 | |
| Tue | 26/6 | Antigen – Antibody Reactions |
| Wed | 27/6 | Antigen – Antibody Reactions |
| Thu | 28/6 | T Cell Development |
| Week 4 | | |
| Sun | 1/7 | T Cell Development |
| Mon | 2/7 | |
| Tue | 3/7 | B Cell Development |
| Wed | 4/7 | B Cell Development |
| Thu | 5/7 | The Major Histocompatibility Complex |
| Week 5 | | |
| Sun | 8/7 | Generation of the Immune Response |
| Mon | 9/7 | |
| Tue | 10/7 | Generation of the Immune Response |
| Wed | 11/7 | Immunological Tolerance |
| Thu | 12/7 | Autoimmunity |

| Week 6 | | |
|---------------|-------------|--------------------------------------|
| Sun | 15/7 | Immunology of Transplantation |
| Mon | 16/7 | Immunopharmacology |
| Tue | 17/7 | Immunology of Transplantation |
| Wed | 18/7 | Tumor Immunology |
| Thu | 19/7 | Allergy and Hypersensitivity |
| Week 7 | | |
| Sun | 22/7 | Allergy and Hypersensitivity |
| Mon | 23/7 | Immunopharmacology |
| Tue | 24/7 | Primary Immunodeficiency |
| Wed | 25/7 | Primary Immunodeficiency |
| Thu | 26/7 | Immunopharmacology |

Recommended Books:

1. **Basic and Clinical Immunology**
Mark Peakman, Diego Vergani
Churchill Livingstone
Second Edition, 2009

2. **Review of Medical Microbiology and Immunology**
Waren Levinson
Lange, Eleventh edition, 2010