

Institute of Microbiology and Molecular Genetics
Faculty of Life Sciences
University of the Punjab, Lahore
Course Outline



Programme	BS	Course Code	MMG 304	Credit Hours	3(2+1)
Course Title	IMMUNOLOGY				
COURSE INTRODUCTION					
<p>This course introduces the study of the immune system, including its components, functions, regulation, and interactions with pathogens and other systems of the body. It delves into basic immunological principles and their clinical applications in health and disease. Topics covered may include innate and adaptive immunity, antigen recognition, immune cell types and functions, immunological memory, host-pathogen interactions, immunodeficiency, and emerging trends in immunological research.</p>					
LEARNING OUTCOMES					
<p>On the completion of the course, the students will be able to:</p> <ol style="list-style-type: none"> 1. Identify different components of the immune system, including cells, tissues, organs, and molecules involved in immune responses. 2. Explain the mechanisms underlying innate and adaptive immunity, including antigen recognition, immune cell activation, and effector functions. 3. Understand the mechanisms of immune regulation and tolerance, including self-tolerance and the prevention of autoimmune responses. 					
COURSE CONTENT					
<p>Introduction to Immunology: Immunology and its significance in health and disease, Components of the immune system, including cells, tissues, and organs, Difference between innate and adaptive immunity, Historical milestones in the field of immunology and their contributions, Innate Immunity: Key components of the innate immune system, including phagocytes, natural killer cells, complement system and its activation, Mechanisms by which innate immune cells recognize and respond to pathogens, Role of inflammation in innate immunity, The concept of pattern recognition receptors (PRRs) and their role in innate immune recognition, Adaptive Immunity: Principles of adaptive immunity, including antigen specificity and memory, Structure and function of B cells and T cells, Antigen processing and presentation and T cell activation, Role of antibodies in humoral immunity, Immunological Disorders: Common immunodeficiency disorders, autoimmunity and the mechanisms of self-tolerance, Hypersensitivity and its types.</p>					
PRACTICALS					
<p>Laboratory techniques commonly used in immunological research, such as Agglutination, precipitin test, Enzyme-Linked Immunosorbent Assay, Lateral Flow Assay, Radioimmunoassay, and Immunofluorescence technique.</p>					

TEXTBOOKS AND READING MATERIAL

- 1 Owen, J., Punt, J., & Stranford, S. (2018). *Kuby immunology*. 8th Edition, W. H. Freeman and Company.
- 2 Abbas, A. K., Lichtman, A. H., & Pillai, S. (2017). *Cellular and molecular immunology*, 9th Edition, Elsevier.
3. Abbas, A. K. (2024). *Basic Immunology: Function and Disorders of the Immune system*, 7th Edition, Elsevier.

ASSESSMENT

Sr. No.	Elements	Weightage	Details
1.	Midterm Assessment	35%	Written Assessment at the mid-point of the semester.
2.	Formative Assessment	25%	Continuous assessment includes Classroom participation, assignments, presentations, viva voce, attitude and behavior, hands-on activities, short tests, projects, practicals, reflections, readings, quizzes etc.
3.	Final Assessment	40%	Written Examination at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, fieldwork , report writing etc.