

Branch Name:	B.Sc. Microbiology
Program Code:	SC102
Course Name:	Basics of Immunology
Course Code:	2SC1020504
Pre-requisite Course:	Basic knowledge of Immunology

Course Objective:

1. To understand basic mechanism of Immunity
2. To understand about Antigens & Antibody
3. To understand Design of Vaccines
4. To understand various Antigen-antibody Interactions

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	--	--	3	70	30	--	--	100

Subject Contents:

Unit	Content	Lectures	Weightage
1	Immunity and Immune response: ✓ Introduction and Historical perspective, Immunity: Types: Innate and Acquired Immunity, Active and Passive Immunity, Natural and Artificial Immunity, Cell Mediated and Humoral Immunity, ✓ Herd Immunity Innate immunity: Skin & Mucosal Barrier, Physiological Barrier, Phagocytic Barrier, Inflammatory Barrier. ✓ Complement Fixation –Classical, Alternative and lectin Pathway Acquired Immunity: Primary and Secondary Immune Response, Clonal Selection Theory ✓ Cells, Tissue and Organs of immune system : Peripheral and Central Lymphoid System, Lymphoid and Myeloid Cells, Lymphatic System, Cytokine and their role in immunity	13	28%
2	✓ Antigen and Immunogen: Nature, ✓ Types of Antigen, Characteristics of Antigen (Foreignness, High molecular weight, Chemical complexity, Degradability) Antigenicity and Immunogenicity, Epitopes, Epitopes recognized by B- Cells and T-cells, isoantigen, ✓ Homologous and heterologous antigens, Super antigens and Cell Associated Differentiation Antigens CD's, ABO & Rh antigens MHC molecules, Haptens Immunogenic adjuvant. Cross Reactivity ✓ Antibody structure and functions. Structural features and biological properties of IgG, IgM, IgA, IgD & IgE. T-Cell & B-Cell generation: -Generation (Maturation), Activation, Proliferation and differentiation	19	44%

3	Immunoreactions and immunization Antigen-antibody Interactions : ✓ Types(Precipitation reactions, Agglutination reaction, CFT, Neutralization, Serotyping, Flow cytometry, Immunoblot technique, Immunochromatographic techniques, IFT, RIA, ELISA) and Mechanism(Lattice Hypothesis) Prophylactic Immunization: ✓ Principles of vaccination, ✓ Types of Vaccines, Schedule of Vaccination, Hazards of Vaccination	13	28%
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Text books:

1. Immunology : by IM Roitt, J. Brostoff and DK Male (1993) BMP, London.
2. J Kuby (1991). Immunology freeman and company.

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2. J Kuby (1991). Immunology freeman and company
3. A.K. Abbas, A.H. Uchtman, J.S. Pober (1994). Cellular Molecular immunology - W.B. Saunders Co. Philadelphia.
4. V.R. Muthukkaruppan, S. Baskar and F. Sinigaglia (1986) Hybridometechniques : A Laboratory Course - Macmillan India Limited.
5. V.E. Cells (1994) Cell Biology Vol-I Immunology to III - Academic Press.
6. Basic Immunology by Jacqueline Sharon
7. Coleman, Lombard & Sicard. 1993, Fundamental of immunology. WCB
8. Janewayetal. 1999. Immunobiology.
9. Todd R.F. 2001. Lecture notes on immunology.
10. David Wilid. 2001. Immunoassay Handbook, Macmillan.

List of Open Source Software/learning website:

1. https://www.youtube.com/watch?app=desktop&v=xdlvPk_2r-w
2. <https://www.youtube.com/watch?v=kpwTHDKQ-k4>

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Discuss the development of the knowledge of structure and function of Immune system .	2 Understanding
CLO2	List the types of Immunity.	1 Remembering
CLO3	Understand various Immunoreactions and its application	2 Understanding,
CLO4	Learn basic techniques to identify and interpret disease state and drug effect.	3 Applying, 2 Understanding
CLO5	Compare primary and secondary immune system. Evaluate antibody structure.	4 Analyze 5 Evaluate,
CLO6	The awareness of the immune system will help them for further work in the field of vaccine production.	6 Creating

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Program Outcomes (POs)									Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
CLO1	M	M				M		M				
CLO2	H	H	M		M			L	M			
CLO3	M	M	H					M	M		M	
CLO4	M				M				H	M		
CLO5	M		H		M					H		
CLO6				H		M	H		H		H	M

L= Low M= Medium H= High