Mrs.S. Akhila, Assistant Professor

IMMUNOLOGY

Semester	Subject Code	Category	Lecture		Theory		P	C
III	21CBT3A	Core - III	4 hrs per week	60	4 hrs per week	60	0	4

COURSE OBJECTIVE:

- ✓ To understand the components and functions of the immune system and how immune system discriminates self from non-self-antigens its regulation as well as basic immunological techniques and their applications.

COURSE OUTCOMES:

On the successful completion of the course, students will be able to

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL (K1-K4)
CO1	Identify the components of immunity and define the properties and structures of antigens and immunoglobulins.	K1
CO2	Describe the Cells and organs of immune system.	K2
CO3	Discuss the antigen processing and presentation	K2
CO4	Evaluate the role of immune system in health and disease.	K4
CO5	Employ antigen antibody interaction for interpretation of immune diseases.	K3

Knowledge level: K1- Remember; K2- Understand; K3- Apply; K4- analyze

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	S	S	M	S	S
CO2	S	S	S	M	M	M
CO3	M	S	S	S	M	M
CO4	M	M	S	M	S	S
CO5	M	M	S	M	S	S

S-Strong, M-Medium, L-Low

UNIT-1 INTRODUCTION TO IMMUNE SYSTEM: 14 Hours

Historical perspective, Components of Immunity –Innate immunity, barriers involved in innate immunity. Acquired immunity-humoral and cell mediated immunity.

Antigens**:** Properties of antigen**,** Immunogens, Haptens, Role of adjuvants, antigenicity and immunogenicity. Immunoglobulins-Basic structure, classes and subclasses of antibody molecules.

UNIT-II CELLS AND ORGANS OF IMMUNE SYSTEM: 14 Hours

Cells and molecules involved in innate and adaptive immunity-B cells, T cells, NK cells, Dendritic cells, Monocytes, Macrophages, neutrophils, eosinophil, basophils and mast cells. Organs of the immune system: primary lymphoid organs-Thymus, Bone marrow: Secondary lymphoid organs-Lymph nodes, Spleen, Mucosal associated Lymphoid tissue.

UNIT-III ANTIGEN PROCESSING AND PRESENTATION: 10 Hours

MHC molecules-organization, MHC class I, II and III structure and genes. Antigen processing and presentation-Endogenous antigen (Cytosolic pathway), Exogenous antigen (Endocytic pathway).

UNIT-IV CLINICAL IMMUNOLOGY: 12 Hours

Hypersensitivity – Type I-IV; Autoimmunity-Organ specific (Diabetes mellitus, Hemolytic anemia), Systemic (Rheumatoid arthritis, Systemic Lupus erythematous). Transplantation immunology– Immunological basis of graft rejection; General immunosuppressive therapy, Clinical transplantation (kidney and bone marrow).

Introduction of Cancer biology, tumor antigens, types of tumor antigens, tumor specific antigens and tumor associated antigen.

UNIT-V IMMUNOLOGICAL TECHNIQUES: 10 Hours

Antigen-antibody interactions: Salient features of antigen- antibody interaction, Precipitation reactions-precipitation reaction in fluids and gel,Radialimmunodiffusion, Double immunodiffusion and immunoelectrophoresis. Agglutination reactions.ABO blood grouping. Advanced immunological techniques- RIA, ELISA, Western blotting.Purifications of antigens and antibodies by affinity chromatography.

Distribution of Marks: Theory 80% and Problems 20%

TEACHING METHODOLOGY

- Chalk and board
- Group discussion
- Assignments
- PPT presentations

- Seminars
- Models/Charts

TEXT BOOKS:

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1.	Janis Kuby,Thomas J Kindt,Goldsby	Immunology	W.H.Freeman and company	2007
2.	Ivan Roitt	Essentials of Immunology	Blackwell scientific publication	1988
3.	Kuby	Immunology	Paperback publication	2012
4.	RaifGeha	Case studies in Immunology	Paperback publication	2007
5.	Abul K. Abbas	Basic Immunology	Paperback publication	2002

REFERENCE BOOKS:

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1.	PrimroseS.B., Twyman R.H., and Old R.W	Principles of Gene Manipulation	Blackwell Science	2001
2.	Paul W.E	Fundamentals of immunology	Raven press	1988
3.	Glick B.R. and Pasternak J.J	Principles and applications of recombinant DNA	ASM Press	2003
4.	Thomas J. Kindt	Immunology	Paper pack Publication	2002
5.	Laure M. Sompayrac	How the Immune System Works	Blackwell Publisher	2002

WEB SOURCES:

1. https://study.com/academy/lesson/what-is-immunity-definition-types.html
2. https://www.youtube.com/watch?v=wOy17QrY0bo
3. https://www.youtube.com/watch?v=t9TvTmddanE
4. https://www.youtube.com/watch?v=1uCpPb5jBTQ
5. https://microbiologyinfo.com/antibody-structure-classes-and-functions/

Syllabus designer:

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