



Department of Biotechnology		LP: BT18701 Rev. No: 01 Date: 03.07.2023
B.E/B.Tech/M.E/M.Tech : B.Tech PG Specialisation : NA Sub. Code / Sub. Name : BT18701/Immunology Unit : I	Regulation:2018	

UNIT I INTRODUCTION**12h**

Cells of immune system – Innate and Acquired immunity – Primary and Secondary lymphoid organs – Antigens - Chemical and Molecular nature – Haptens – Adjuvants – Types of immune responses – Antigen processing and presentation – Theory of clonal selection..

OBJECTIVE: To know about the immune system.

Session No*	Topics to be covered	Ref	TeachingAids
1	Cells of immune system – Innate immunity	T1(1-19, 21-36) T2(7-16, 30-40) R1 (11-25)	LCD/PPT/BB/ICT Tools
2	Cells of immune system – Acquired immunity	T1(1-19, 21-36) T2(7-16, 30-40) R1 (26-36)	LCD/PPT/BB/ICT Tools
3	Primary lymphoid organs	T1(147-162) T2(40-43)	LCD & PPT
	Secondary lymphoid organs	T1(147-162) T2(40-43)	LCD & PPT
5	Antigens, Epitopes	T2 (77-81) T3 (50-66)	LCD/PPT/BB/ICT Tools
6	Chemical and Molecular nature, Immunogenicity, Antigenicity, Factors affecting antigenicity	T2 (77-81)	LCD/PPT/BB/ICT Tools
7	Haptens - small molecular antigen	T1(80-83) T1(300-302)	LCD/PPT/BB/ICT Tools
8	Adjuvants - Immune response enhancer	T2 (77-78,81)	LCD/PPT/BB/ICT Tools
9	Types of immune responses – Humoral immunity	T2(448-454)	ICT Tools
10	Types of immune responses – Cellular mediated immunity	T2(448-454)	ICT Tools
11	Antigen processing and presentation	T2(206-209)	LCD & PPT
12	Theory of clonal selection	T2(16-18)	LCD & PPT
Content beyond syllabus covered (if any): Immunogenicity, antigenicity, factors affecting antigenicity, epitopes			

* Session duration: 50 minutes



Sub. Code / Sub. Name : **BT18701/Immunology**
Unit **II**

UNIT II**CELLULAR RESPONSES****10h**

Development, maturation, activation and differentiation of T-cells and B-cells – TCR – T cell subtypes: Th1, Th2, Th17, Tregs etc - Antibodies - Structure and Functions – Antigen-Antibody reactions – Antigen presenting cells – Major histocompatibility complex – Regulation of T-cell and B-cell responses – Memory B and T cell responses.

OBJECTIVE: To study about the cellular responses of immune system.

Session No*	Topics to be covered	Ref	Teaching Aids
13	Development, maturation, activation and differentiation of T-cells	T1(164-174) T2(245-257)	LCD/PPT/BB/ ICT Tools
14	Development, maturation, activation and differentiation of B-cells	T1(164-174) T2(245-257)	LCD/PPT/BB/ ICT Tools
15	T-Cell Receptor	T2(223-241) R2 (136-159)	LCD/PPT/BB/ ICT Tools
16	T-cell subtypes: Th1, Th2, Th17, Tregs	T2(223-241)	LCD & PPT
17	Antibodies - Structure and Functions, Antibodies: genes and generation of diversity	T1(37-58) T2(84-100, 111-135) R1 (88-99)	LCD/PPT/BB/ ICT Tools
18	Antigen-Antibody reactions	T2(145-164)	LCD/PPT/BB/ ICT Tools
19	Antigen presenting cells – Macrophage and Dendritic cells	T2(207-2115)	LCD/PPT/BB/ ICT Tools
20	Major histocompatibility complex	T1(70-77) T2(189-205)	LCD/PPT/BB/ ICT Tools
21	Regulation of T-cell and B-cell responses	T1(173-183), T2(15,16, 292-297)	LCD & PPT
22	Memory B and T cell responses	T1(173-183), T2(15,16, 292-297)	LCD & PPT
Content beyond syllabus covered (if any): Antibodies: genes and generation of diversity			

* Session duration: 50 minutes



Sub. Code / Sub. Name : **BT18701/Immunology**
Unit **III**

UNIT III**INFECTION AND IMMUNITY****8h**

Injury and inflammation – Immune checkpoints: PD1, CTLA4 etc – Immune responses to infections – Immunity to virus, bacteria, fungi and parasites – Complement – Immunosuppression and Tolerance – AIDS and Immunodeficiency Diseases – Resistance and immunization – Vaccines – Immunoprecipitation.

OBJECTIVE: To learn about infection and immune responses to an antigen, immunodeficiency and vaccines..

Session No*	Topics to be covered	Ref	Teaching Aids
23	Injury and inflammation	T2(327-346)	LCD/PPT/BB/ ICT Tools
24	Immune checkpoints: PD1, CTLA4, Immune responses to infections	T2(258)	LCD/PPT/BB/ ICT Tools
25	Immunity to virus, bacteria, fungi and parasites	T2(447-470)	LCD/PPT/BB/ ICT Tools
26	Complement	T2(168-185) R1 (217-232)	ICT Tools
27	Immunosuppression and Tolerance	T2(402-416)	LCD/PPT/BB/ ICT Tools
28	AIDS and Immunodeficiency Diseases	T2(493-518) R3 (437-464)	LCD/PPT/BB/ ICT Tools
29	Resistance and immunization	T2(476-480)	LCD/PPT/BB/ ICT Tools
30	Vaccines – Immunoprecipitation	T2(476-488) R2 (342-359)	LCD & PPT
Content beyond syllabus covered (if any):			

* Session duration: 50 minutes



Sub. Code / Sub. Name : **BT18701/Immunology**
Unit : IV

UNIT IV**TRANSPLANTATION AND TUMOR IMMUNOLOGY****7h**

Transplantation - Genetics of transplantation and Laws of transplantation – Tumor immunology, Tumor antigens – Tumor immune response – Tumor diagnosis and Tumor immunotherapy – checkpoint therapy..

OBJECTIVE: To learn about Tumor immunology.

Session No*	Topics to be covered	Ref	Teaching Aids
31	Transplantation	T2(425-439) R3 (359-382)	LCD & PPT
32	Genetics of transplantation and Laws of transplantation	T2(440-443) R3 (359-382)	LCD/PPT/BB/ ICT Tools
33	Tumor immunology	T1(374-395) T2(525-545) R3 (383-398)	LCD/PPT/BB/ ICT Tools
34	Tumor antigens	T1(374-395) T2(525-545)	LCD/PPT/BB/ ICT Tools
35	Tumor immune response	T1(374-395) T2(525-545)	ICT Tools
36	Tumor diagnosis and Tumor immunotherapy	T1(374-395) T2(525-545)	LCD/PPT/BB/ ICT Tools
37	Checkpoint therapy	T1(374-395) T2(525-545)	LCD/PPT/BB/ ICT Tools
Content beyond syllabus covered (if any):			

* Session duration: 50 minutes



Sub. Code / Sub. Name : **BT18701/Immunology**
Unit : V

UNIT V**ALLERGY, HYPERSENSITIVITY AND AUTOIMMUNITY****8h**

Allergy and Hypersensitivity - Types of Hypersensitivity – Autoimmunity – Autoimmune Disorders. Systemic lupus Erythematosus, Hashimoto thyroiditis, Rheumatoid Arthritis, Juvenile (Type 1) Diabetes, polymyositis, Addison disease, Pernicious anemia, Glomerulonephritis, and Pulmonary fibrosis..

OBJECTIVE: To learn about Autoimmunity.

Session No*	Topics to be covered	Ref	Teaching Aids
38	Allergy and Hypersensitivity	T2(371-396), T1(322-347)	LCD/PPT/BB/ ICT Tools
39	Types of Hypersensitivity	T2(371-396), T1(322-347)	LCD/PPT/BB/ ICT Tools
40	Autoimmunity	T1(396-420) T2(407- 416) R2 (428-448)	LCD/PPT/BB/ ICT Tools
41	Autoimmune Disorders	T1(396-420) T2(407- 416) R2 (428-448)	LCD/PPT/BB/ ICT Tools
42	Systemic lupus Erythematosus, Hashimoto thyroiditis,	T1(421- 448) T2(371-396), T1(322-347)	LCD & PPT
43	Rheumatoid Arthritis, Juvenile (Type 1) Diabetes	T1(421- 448) T2(371-396), T1(322-347)	LCD & PPT
44	Polymyositis, Addison disease, Pernicious anemia	T1(421- 448) T2(371-396), T1(322-347)	LCD & PPT
45	Glomerulonephritis, and Pulmonary fibrosis	T1(421- 448) T2(371-396), T1(322-347)	LCD & PPT
Content beyond syllabus covered (if any): Gal Operon and Ara Operon			

* Session duration: 50 minutes



SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Page 6 of 6

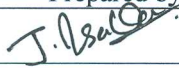
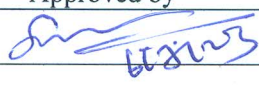
REFERENCES:

TEXT BOOKS

1. Peter, J, Delves, Seamus, J, Martin, Dennis, R and Burton, Ivan, M, Roitt." Roitt's Essential Immunology", Wiley-Blackwell Publication., 13th edition, 2017
2. Jenni, Punt, Sharon, Stanford, Patricia, Jones, and Judith, A, Owen, "Kuby Immunology", WH Freeman & Co., 8th Edition, 2018.
3. Ashim, K, Chakravarthy, "Immunology and Immunotechnology", Tata McGraw-Hill, 2006.

REFERENCE BOOKS

- 1.Coico, Richard, "Immunology: A Short Course", 7th Edition. John Wiley, 2015.
2. Khan and Fahim, Halim, "Elements of Immunology", Pearson Education, 2009.
3. Abul, K. Abbas, Andrew, H. H. Lichtman and Shiv, Pillai, "Cellular and Molecular Immunology", 8th Edition, Elsevier, 2014

	Prepared by	Approved by
Signature		
Name	Dr.J.Isaivani	Prof. Dr. E.Nakkeeran
Designation	Assistant Professor	HEAD OF THE DEPARTMENT /BIO
Date		
Remarks *:		
Remarks *:		

* If the same lesson plan is followed in the subsequent semester/year it should be mentioned and signed by the Faculty and the HOD