

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
SECOND SEMESTER 2021-2022
(Course Handout Part II)

15.01.2022

In addition to part I (general handout for all courses appended to the timetable) this portion gives further specific details regarding the course.

Course No. : BIO F342
Course Title : Immunology
Instructor in Charge : PROF. VIDYA RAJESH
Tutorial Instructor : Sushma Kumar and Vidya Rajesh.

Course Description: Introduction to immune system, cell mediated and humoral immunity, immunity to infectious diseases, immune mechanisms involved in cancer, immunodeficiency, autoimmunity, vaccination and organ transplantation.

Scope and objective of the course: This course has been designed to provide an insight in the concept and latest developments in immunology. Emphasis will be given on developing a molecular, cellular and clinical perspective of the area.

1. Text Book (TB): Kuby Immunology by Kindt et al., 6th Ed. Freeman press. 2007.

2. Reference Book (RB)

RB1 - Kuby Immunology by Owen et al., 7th Ed. Freeman press. 2013

RB2 - Immunology: An Introduction, Tizard, Cengage publication, 4th Ed. 2010

RB3- Cellular and Molecular Immunology by Abul K. Abbas *et al*; 7th Ed., Elsevier press. 2012

3. Course Plan:

Lecture No.	Learning objectives	Topics to be covered	Chapter in the Text Book
1-2	Introduction and overview	Introduction to immunology, concept of innate and adaptive immunity	TB Ch 1, RB1 Ch 1
3-4	Cells and organs of the immune system	Hematopoiesis, cells and organs of the immune system (only functional aspects)	TB Ch 2, RB 1 Ch 2
5-6	Innate immunity	Natural barriers, effector cells and molecules, receptors and signaling	TB Ch 5, RB1 Ch 3
7-9	Antigens and Antibodies	Hapten and antigens, Immunogenicity and antigenicity, epitopes, antibody classes and biological activities	TB Ch 3, RB1 Ch 4,6
10-12	Organization and expression of immunoglobulin genes	Multigene organization of Ig genes and gene rearrangement	TB CH7, RB1 Ch 5
13-14	The Complement system	Complement activation, function, components and regulation	TB Ch 6, RB1 Ch 7

15-17	Major Histo- compatibility Complex and antigen presentation	Types, structures, cellular distribution, antigen processing and presentation	TB Ch 8, RB1 Ch 8
18-20	T and B cell activation	T receptor complex, MHC-TCR interactions, T cell activation and effector functions; and B cell activation and effector functions	TB Ch 3, 11, 12, RB1 Ch9, 10,11
21-22	Cytokines	Properties, receptors, functions and methods of analysis	TB Ch 4, RB1 Ch 6
23-25	Tolerance and Autoimmunity	Tolerance, organ specific and systemic autoimmune diseases	TB Ch 16, RB1 Ch 16
26-27	Hypersensitivity	Types of hypersensitivity & related problems	TB Ch 15, RB1 Ch 15
28-30	AIDS, immuno-deficiencies and related diseases	Primary and secondary immunodeficiency's (concept only), AIDS, immuno-genetic disorder.	TB Ch 18, 4, 6, RB1 Ch 20
31-33	Cancer and Immune System	Oncogenes and cancer induction, categories of cancer, immune evasion mechanisms during cancer and cancer immunotherapy	TB Ch 19, RB1 Ch 21
34-37	Infectious diseases and vaccines	Invasion by microbes, Immuno-evasion mechanisms, Active and passive immunization, recombinant bacterial and viral vaccines, subunit vaccines	TB Ch 17, RB1 Ch 18, 19
38-40	Clinical advancements in Immunology	Abzymes, antibody engineering, therapeutic uses of antibodies, cytokines, HLA and transplantation, methods and markers for immuno-diagnostics	RB1 Ch 5,6, 14, 16, 17, 21 RB3 (Appendix 4)

* Class notes will also be included in addition to these references.

4. Evaluation scheme: Course total – 200.

EC No .	Evaluation Component	Duration	Weightage (%) and Marks	Date, Time & Venue	Nature of Component
1.	Mid-semester	90 min	25 (50 marks)		CB
2.	Classroom participation	Presence, Attentiveness and interaction during lectures and tutorials	5 (10 Marks) Can start with 0 too.	Every class	Final marks based on observation of team – No appeal on marks
3.	Announced Quizzes - 02	One before mid-semester and one after mid semester	20 (40 marks)	Lect/Tut	CB

4.	Assignment - 1		10 (20 marks)		OB
5.	Compre exam	2 hours	40 (80 marks)		CB + OB (20+20)

- 5. Chamber consultancy hour:** To be announced in classroom or tutorial.
- 6. Notices:** Notices will be displayed on Bio Notice Board and CMS.
- 7. Make up Policy:** Make-up decisions will be made on a case-by-case basis and only genuine cases as determined by the team and validated by Wardens and/or Medical Officer will be considered. However, there will be no make-up for assignments and surprise quizzes.
- 8. Academic honesty and integrity policy:** Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.

Instructor In Charge,
BIO F342
Immunology.