BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
SECOND SEMESTER 2019-2020
(Course Handout Part II)

06-01-2020

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 **: Dr. Trinath Jamma**
Tutorial Instructor **: Shifa Bushra Kotwal**

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:**

Lect. #	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-	Types, structures, cellular distribution, antigen	TB Ch 8

	compatibility Complex and antigen presentation	processing and presentation	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	RB1 Ch9, 10,11 TB Ch 3, 11, 12
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
38-41	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:

EC No.	Evaluation Component	Duration	Weightage (%)	Date, Time & Venue	Nature of Component
1.	Mid-semester	90 min	20	3/3 11.00 -12.30 PM	CB
2.	Surprise Quizzes		20		CB
3.	Assignments		20		OB
4.	Comprehensive	3 hours	30 10	04/05 AN	CB OB

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