BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
SECOND SEMESTER 2018-2019
(Course Handout Part II)

07-01-2019

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**
Co-instructor **: Prof. 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:**

Lect. #	Learning Objectives	Topics to be covered	Chapter in the Text Book	Faculty
1-2	Introduction and overview	Introduction to immunology, concept of innate and adaptive immunity	TB Ch 1, RB1 Ch 1	**VR**
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	**VR**
5-7	Innate immunity	Natural barriers, effector cells and molecules, receptors and signaling	TB Ch 5 RB1 Ch 3	**VR**
8-10	Antigens and Antibodies	Hapten and antigens, Immunogenicity and antigenicity, epitopes, antibody classes and biological activities	TB Ch 3 RB1 Ch 4,6	**VR**
11-12	Organization and expression of immunoglobulin genes	Multigene organization of Ig genes and gene rearrangement	TB CH7 RB1 Ch 5	**VR**
13-14	The Complement system	Complement activation, function, components and regulation	TB Ch 6 RB1 Ch 7	**VR**

15-17	Major Histo-compatibility Complex and antigen presentation	Types, structures, cellular distribution, antigen processing and presentation	TB Ch 8 RB1 Ch 8	**VR**
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	**VR**
21-22	Cytokines	Properties, receptors, functions and methods of analysis	TB Ch 4 RB1 Ch 6	**TJ**
23-25	Tolerance and Autoimmunity	Tolerance, organ specific and systemic autoimmune diseases	TB Ch 16 RB1 Ch 16	**TJ**
26-27	Hypersensitivity	Types of hypersensitivity & related problems	TB Ch 15 RB1 Ch 15	**TJ**
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	**TJ**
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	**TJ**
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	**TJ**
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)	**TJ**

***** 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	14/3 11.00 -12.30 PM	CB
2.	Surprise Quizzes		20		CB
3.	Assignments		20		CB
4.	Comprehensive	3 hours	40	08/05 AN	OB

5. Chamber consultancy hour: To be announced in class room 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