

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
SECOND SEMESTER 2020-2021
(Course Handout Part II)

16-01-2021

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. KIRTIMAAN SYAL
Instructors : Dr. Kirtimaan Syal & Dr. Trinath Jamma
Tutorial Instructor : Dr. Kirtimaan Syal, Dr. Trinath Jamma & Sushma Kumar

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.
<https://www.amazon.in/Kuby-Immunology-Thomas-J-Kindt/dp/0716767643>

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	TJ
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	TJ
5-6	Innate immunity	Natural barriers, effector cells and molecules, receptors and signaling	TB Ch 5 RB1 Ch 3	TJ
7-9	Antigens and Antibodies	Hapten and antigens, Immunogenicity and antigenicity, epitopes, antibody classes and biological activities	TB Ch 3 RB1 Ch 4,6	TJ

10-12	Organization and expression of immunoglobulin genes	Multigene organization of Ig genes and gene rearrangement	TB CH7 RB1 Ch 5	TJ
13-14	The Complement system	Complement activation, function, components and regulation	TB Ch 6 RB1 Ch 7	TJ
15-17	Major Histo-compatibility Complex and antigen presentation	Types, structures, cellular distribution, antigen processing and presentation	TB Ch 8 RB1 Ch 8	TJ
18-20	T and B cell activation	T receptor complex, MHC-TCR interactions, cell activation and effector functions; and B cell activation and effector functions	TRB1 Ch9, 10,11 TB Ch 3, 11, 12	TJ
21-22	Cytokines	Properties, receptors, functions and methods of analysis	TB Ch 4 RB1 Ch 6	K KS
23-25	Tolerance and Autoimmunity	Tolerance, organ specific and systemic autoimmune diseases	TB Ch 16 RB1 Ch 16	KS
26-27	Hypersensitivity	Types of hypersensitivity & related problems	TB Ch 15 RB1 Ch 15	KS
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	KS
31-32	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	KS
33-35	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	KS
36-38	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)	KS

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

4. Evaluation scheme:

EC No.	Evaluation Component	Duration	Weightage (%)	Date, Time & Venue	Remarks
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1.	Mid-semester	90 min	30	04/03 11.00 - 12.30PM	OB
2.	Four Announced Quizzes	20 min each	30	Lecture/Tutorial Hours	OB
4.	Comprehensive	2 hours	40	10/05 AN	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 announced quizzes.

8. Note on 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.

Kirtimaan Syal, PhD

Instructor in Charge

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