BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, Pilani
Hyderabad Campus
AGSRD

FIRST SEMESTER 2022-23
COURSE HANDOUT (Part II)

Date:26thAugust 2022

In addition to part I (General Handout for all courses appended to the Time table) this portion gives further specific details regarding the course.

Course No. : **PHA G538**
Course Title : **Immunopharmacology**
Instructor-in-Charge : **Onkar Prakash Kulkarni**

Course Description :
The course will include an overview of the cell types and key mediators involved in the innate and adaptive immune responses, the use of antibody preparations and small molecule immunotherapeutics to target chronic inflammation, cancer, metabolic diseases, neurodegenerative diseases and autoimmunity in selected diseases. This course will explore the role of gut microbiota and regulation of immune response. The development of therapeutic anti-bodies and proteins will be discussed along with aspects of immunotoxicology

1. Scope and Objective of the Course:
The course will include an overview of the cell types and key mediators involved in the innate and adaptive immune responses, the use of antibody preparations and small molecule immunotherapeutics to target chronic inflammation, cancer, metabolic diseases, neurodegenerative diseases and autoimmunity in selected diseases. This course will give the students an advanced understanding of the principles and mechanisms of the immune system and immune responses in the context of infection, malignancy and immunological disorders. The course will also enable the students to describe the fundamental mechanisms underlying immunologic disease and associate these mechanisms with strategies for therapeutic modulation of the immune system. It will help the students to gain the necessary transferable and research skills in basic and clinical immunology to promote lifelong learning and career development.

2. Text Book :
1. Kuby Immunology by Owen et al., 7th Ed. Freeman press. 2013.

2. Reference Books :
1. Principles of Immunopharmacology Editors: Nijkamp, Frans P., Parnham, Michael J. (Eds.)
2. Janeway'sImmunobiology, Eighth Edition.

4. Course Plan

Lec. No.	Topics	Contents	Ref.

1-3	Introduction to Immunology	Cells of the immunesystem, innate and acquiredimmunity, primary and secondarylymphoid organs, antigens:chemical and molecular nature,clonal selection theory, humoral andcellular immunity.	TB 1: Ch 1, Ch 2, Ch 3, Ch 4, Ch 5 RB1: A1
4-6	Humoral Immunity	B-lymphocytesand their activation,structure and function of immunoglobulins, antibody genesand generation of diversity,production of monoclonal antibodies and applications,cytokines.	TB 1: Ch 5, Ch 11, Ch 12 RB1: A3
7-10	Cell-mediated Immunity	Activation and function of T-cells,antigen presenting cells, antigenprocessing and presentation, Majorhistocompatibility Complex- MHCClass I and II molecules.	TB 1: Ch 9, Ch 7, Ch 8 RB1: A2
11-20	Infection and Immunity	Injuryand inflammation, immuneresponse to infections: immunity toviruses, bacteria, fungi andparasites, and immune deficiencies.	TB 1: Ch 17, Ch 16, Ch 19 RB1: A8
21-25	Vaccinology	Development of Live attenuated, Killed, sub-unit, recombinant vaccines and their use.	TB 1: Ch 18 RB1:C1
26-28	Immunodeficiency diseases, allergy and hypersensitivity reactions	Immune response in human pathology: Hypersensitivity and autoimmunity. Perspectives of immunotherapy in the management of asthma and other allergic conditions	TB 1: Ch 16 RB1: A9,C5
29-32	Autoimmunity	Criteria andcauses of autoimmune disorders,myasthenia gravis, systemic lupuserythematosus, multiple sclerosis,rheumatoid arthritis.Disease-modifying antirheumatic drug, immunomodulatory drugs for autoimmune disorders	TB 1: Ch 20 RB1: A9, C15
26-28	Transplantation immunology	Relationshipbetween donor and recipient, role of MHC molecules in allograftrejection, bone marrow andhaematopoietic stem celltransplantation.Immunosuppressive drugs in transplant rejection	TB 1: Ch 21 RB1: C12
29-32	Tumor immunology	Tumor antigens,categories of tumor antigens, tumorimmunoediting hypothesis, tumor mediated immune suppression, immune therapy of tumor.	TB 1: Ch 22 RB1: A10, C6
39-40	Immunotoxicology	Mechanisms of immunotoxicity by pharmaceuticals. Procedures for preclinical testing of direct immunotoxicity. Procedures for immunotoxicity testing in humans. Immunotoxicity regulations	RB1: D1

5.Evaluation:.

Component	Duration	Weightage (%)	Date & Time	Remarks
Mid-Semester Test	90 Min.	30	31/10 3.30 - 5.00PM	CB
Comprehensive Examination	3 h	30	19/12 AN	CB + OB
*Continuous Assessment (Assignments/ quiz)		40	During semester	

*Continuous assessment will be based on theory covered in class. Topics and number will be announced in the class. It will be in terms of home assignments, tutorials, and surprise tests.

6. Grading Procedure: Grading would be done by the bunching procedure. In borderline cases subjective judgment will be used to award the grades. It is not mandatory to award all the eight grades (i.e. from A to E). Subjective judgment based on attendance for the lectures, tutorials, appearance in quiz, student's involvement in the course and performance in the class would be used in the award of grades. **The student shall not be considered as "exposed" to the course, unless he/she demonstrates appreciable skill in both the class and theory components of the course and through classroom participation.** Attending tutorial and appearing surprise quiz is very important. Students not appeared in any quiz or not submitted assignments, not appeared in any test/ comprehensive exam will not be considered exposed to the course. It is also expected that student will attend classes regularly to get proper exposure and to provide chance of evaluation of his knowledge.

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.