BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, Pilani
Pilani Campus
AUGS/ AGSR Division

SECOND SEMESTER 2022-23
COURSE HANDOUT

Date: 30.12.2023

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 G611**
Course Title	**: Advanced Pharmacology**
Instructor-in-charge	**: ARTI DHAR**
Instructors	: **Arti Dhar, Onkar Kulkarni**

Tutorial/Practical Instructors: Ganesh Lahane, Sonam Dolma, Avinash Wadkar Ashtosh Mahale

1. Course Description: Latest advancement/developments in the areas of Pharmacology & Therapeutics will be discussed under this course.

2. Scope and objective of the course:

The course intends to discuss the latest developments in Pharmacology, clinical Drugs and Therapeutics. This course also emphasizes on the molecular aspects of pharmacology, its relations to recent development in therapeutics including of all-important branches - including epigenetics, Stem cell and gene therapy Special emphasis is given to neuro-pharmacology and cellular basis for various pharmacological functions including neuro-prosthetics as well as bio-medical instrumentation.

3. Text Book: Goodman & Gilman's (Brunton Laurence) "The Pharmacological basis of Therapeutics; McGraw Hill, 13th edition, 2018

4. Reference Books:

1) Betram G. Katzung "Basic & Clinical Pharmacology" McGraw-Hill/Appleton & Lange; 11th edition , 2009

2) Anthony J. Trevor, Bertram G. Katzung, Susan B. "Katzung's Pharmacology: Examination and Board Review "Master McGraw-Hill/Appleton & Lange; 12th edition, August , 2018

3) Mary Julia, Richard A. Harvey, Pamela C. Champe"Lippincott's Illustrated Reviews: Pharmacology" Lippincott Williams & Wilkins; 2nd edition, January, 2000

4) H. P. Rang; M. M. Dale, J. M. Ritter, Phyllis Gardner, "Pharmacology" Churchill Livingstone; 6th edition, 2007

Additional information:

- Emerging trends and updates have to be obtained from selected journals; hence it is mandatory to refer the journals and review articles .
- Students should go through the following journals regularly on current research in areas related to the

course topics.

1. Annual Reviews of Pharmacology series.
2. Trends in Pharmacological sciences.
3. Neuropharmacology
4. Current Opinion in Pharmacology
5. Drug Discovery Today: Disease Mechanism
6. European Neuropsychopharmacology
7. Biochemical Pharmacology
8. Vascular Pharmacology
9. Pharmacology Biochemistry and Behavior
10. Indian Journal of Pharmacology

5. Course Plan:

Module No.	**Lecture Session**	**Refrences**	**Learning outcomes**
L-1: (1-2) Introduction to Pharmacokinetics & Pharmacodynamics	ADME, Principles of Pharmacology, Pharmacodynamics	TB:1-3 and Class notes	Understand and study the basic concept of P,cology
L: (3-4)Principle of drug action, dose response relationships	Molecular mechanism, Receptor, Classification, Drug Interaction.	TB:5,8-14; Ref. 4	Understand the type of mol signaling and drug action
L-2: (5-8)Receptor - ligand interactions, signal pathways, putative-role of neurotransmitters,	Signal transduction, Secondary Messengers, serotonergic, cholinergic, adrenergic, dopaminergic systems	TB:5,8-14; Ref.1, 2, 3 and 4; Class notes	-do-
L3: (9-10) Toxicology studies.	Principle of toxicology, OECD Guidelines and regulation of Toxicology studies.	TB:4; Class notes	Understand and study the guidelines, regulation of Toxicology studies.
4: (11-15) Pharmacology of cardiovascular (CVS) and Renal system	Cardio vascular and renal Pharmacology, Recent advancement for the management of hypertension, congestive heart failure, angina pectoris, myocardial infarction and kidney disease	TB:25-29; Ref.1, 2, 3 and 4	Understanding the latest management of CVS diseases
L4: (16-22) Pharmacotherapy of nervous system disorder/disease	Principles of Psychopharmacology, epilepsy, depression, schizophrenia, mania, Insomnia, Alzheimer and Parkinson disease	TB:15-16,21,22; Ref.1and 4; Class notes	Understanding the patho-physiology and latest management of CNS diseases
L5: (23-25)Introduction, Metabolic and respiratory Disorders	Diabetes mellitus, obesity/Insulin resistance and respiratory disorders-COPD/Asthma	TB:31,36,43,44; Ref.1and 4; Class notes	Study and understanding the Therapeutic advances in DM, Asthmas and COPD
L6: (26-28) Digestive System and related disorders-including cancer biology	Patho- physiology of ulcers; Advancement for the management of ulcer, cancer (G.I.T, Breast and blood cancer)	TB:45-47, ;Ref.1 and 4 and Class notes	Study and understanding the Therapeutic advances for cancer management

L7: (29-31) Introduction to Infectious disease and their management	Recent advances in treatment of infectious disease and in particular Nosocomial infections, strategies to combat microbial resistance and drugs in the pipeline (TB, Covid- 19)	TB: 48-63; Class notes Ref. 4	Recent advances in treatment of infectious disease (5th generation cephalosporins)
L8:: (32-35) Pharmacogenetics, epigenetics, gene therapy in health.	Role of Pharmacogenetics, epigenetics and Gene therapy in disease and disorders	TB:7; SELF STUDY	Therapeutic relevance of gene modification, epigenetics
L9 (36-40)Introduction to bio-medical instrumentation and neuro-prosthetics	Advancement for Sensory, motor and cognitive prosthetics, bio-medical aids in rehabilitation therapy.	Tb:64; Class notes, Self Study	Therapeutic Advancement for bio-medical aids in rehabilitation
L10:(40-43) Buffer lecture	Buffer lecture hours-Few topics may spill over from plan based on discussions, conduct of quiz, etc.	Class notes	

6. Evaluation Scheme:

Component	**Duration**	**Weightage (%)**	**Date & Time**	**Nature of component (Close Book/ Open Book)**
Mid-Semester Test	90 Min.	30	To be announced	CB
Comprehensive Examination	180 Min *	40		CB and OB
** Continuous assessment	-	30	-	Continue..

* Comp duration can be changed as per university guidelines

** Continuous assessment may include quiz(zes)#, Laboratory, Day to Day work, Viva-Voce, Home assignment, and Lab. component including Lab. Compre., etc.

Home Assignments, Quiz(zes) etc. will be based on advanced topics in pharmacology & pharmacotherapy. Assignment(s) may be practical / theory oriented for which two copies of type-written report in a standard format should be submitted as per deadline(s) that would be announced, therein. It may also include a viva and or a seminar presentation

7. Chamber Consultation Hour: time to be announced in class.

Notices: concerning the course will be displayed on the Pharmacy Department notice board only.

9. **Make-Ups**: Make-Ups are not given as a routine. It is solely dependent upon the Genuineness Of The Circumstances under which a student fails to appear in a scheduled evaluation component. In such circumstances, prior permission should be obtained from the Instructor-in-Charge. The decision of the Instructor- in-Charge will be final.

10. **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
Course No. PHA G 611