



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

SECOND SEMESTER 2020-21
COURSE HANDOUT

Date: 10.03.2021

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 Number : PHA G611
Course Title : Advanced Pharmacology
Instructor In-charge: Prof. Rajeev Taliyan
Instructors : Sarathlal KC, Violina K
Tutorial/Practical Instructors: : Sarathlal KC, Violina K

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 "The Pharmacological basis of Therapeutics; McGraw Hill, 12th edition, 2011. (13th edition is also available online)

4. Reference Books:

- 1) Bertram 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; 6th edition, August , 2001
- 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.



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| 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	Learning outcomes	Text Book/Ref. text book: Chap/ sec
L-1: (1-2) Introduction to Pharmacokinetics & Pharmacodynamics	ADME, Principles of Pharmacology, Pharmacodynamics	Understand and study the basic concept of Pharmacology	TB:1-3 and Class notes
L: (3-4) Principle of drug action, dose response relationships	Molecular mechanism, Receptor, Classification, Drug Interaction.	Understand the type of molecular signaling and drug action	TB:5,8-14; Ref. 4
L-2: (5-8) Receptor - ligand interactions, signal pathways, putative-role of neurotransmitters,	Signal transduction, Secondary Messengers, serotonergic, cholinergic, adrenergic, dopaminergic systems	-do-	TB:5,8-14; Ref.1, 2, 3 and 4; Class notes
L3: (9-10) Toxicology studies.	Principle of toxicology, OECD Guidelines and regulation of Toxicology studies.	Understand and study the guidelines, regulation of Toxicology studies.	TB:4; Class notes
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	Understanding the latest management of CVS diseases	TB:25-29; Ref.1, 2, 3 and 4
L4: (16-22) Pharmacotherapy of nervous system disorder/disease	Principles of Psychopharmacology, epilepsy, depression, schizophrenia, mania, Insomnia, Alzheimer and Parkinson disease	Understanding the pathophysiology and latest management of CNS diseases	TB:15-16,21,22; Ref.1 and 4; Class notes
L5: (23-25) Introduction, Metabolic and respiratory Disorders	Diabetes mellitus, obesity/Insulin resistance and respiratory disorders-COPD/Asthma	Study and understanding the Therapeutic advances in DM, Asthma and COPD	TB:31,36,43,44; Ref.1 and 4; Class notes
L6: (26-28) Digestive System and related disorders-including cancer biology	Patho- physiology of ulcers; Advancement for the management of ulcer and cancer (G.I.T, Breast and blood cancer)	Study and understanding the Therapeutic advances for cancer management	TB:45-47; Ref.1 and 4 and Class notes



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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)	Recent advances in treatment of infectious disease (5th generation cephalosporins)	TB: 48-63; Class notes Ref. 4
L8:: (32-35) Pharmacogenetics, epigenetics, gene therapy in health.	Role of Pharmacogenetics, epigenetics and Gene therapy in disease and disorders	Therapeutic relevance of gene modification, epigenetics	TB:7; SELF STUDY
L9 (36-40)Introduction to bio-medical instrumentation and neuro-prosthetics	Advancement for Sensory, motor and cognitive prosthetics, bio-medical aids in rehabilitation therapy.	Therapeutic Advancement for bio-medical aids in rehabilitation	Tb:64; Class notes, Self Study
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	<TEST_1>	
Comprehensive Examination	3 h	40	<TEST_C>	
* Continuous assessment		30		

* 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. Note (if any):

Instructor-in-charge
Course No. PHA G 611