

**BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI**  
*Hyderabad Campus*  
**Second Semester 2019 -2020**  
**Course Handout**

**Date: 06.01.2020**

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 F241*  
Course Title : *Pharmaceutical Chemistry*  
Instructor-in-charge : D. Sriram

**1. Scope and Objective of the Course:**

This course deals with study of important classes of organic compounds. It provides students a basic idea about reactions of these compounds and mechanisms for these reactions. This course also emphasizes the uses of inorganic compounds in pharmacy. This course also covers chemistry of some important heterocycles.

**2. Course learning outcomes:** On successful completion of the course, the student will be able to

- Identify strategy for new drug synthesis [CO-1]
- Choose various chemical reactions involved during the drug synthesis [CO-2]
- To devise the synthetic route for various drugs. [CO-3]

**3. Text Book:**

1. L. G. Wade and Maya Shankar Singh, Organic Chemistry, Pearson, 6<sup>th</sup> Edition
2. Bentley and Driver's Text book of Pharmaceutical Chemistry. 8<sup>th</sup> Edition, Oxford Medical publications.

**4. Reference Books:**

1. R T Morrison and R N Boyd Organic Chemistry PHI, 6<sup>th</sup> Edition
2. T W Graham Solomon and Craig B Fryhle , Organic Chemistry, 8<sup>th</sup> Edition, John Wiley and Sons , New York , 2004.
3. John A. Joule, [Keith Mills](#). Heterocyclic Chemistry, 5th Edition, April 2010, Wiley-Blackwell, ISBN: 978-1-4051-3300-5
4. Inorganic Pharmaceutical Chemistry by Dr. K. G. Bothara, Pragati Books.

**5. Course Plan :**

Lecture No.	Topics to be covered	Learning objective	Chapter in the Text Book
1 – 2	Naming of organic compounds: Systematic nomenclature, General principles, saturated branched and unbranched chain, alkene, alkyne, carbonyl, carboxylic acid, halogens, amines etc.	To label any chemical structure with IUPAC name.	1.10A-1.10H

3-6	Chemistry of alcohols, phenol & ethers: Structure and classification, general synthesis and various reactions	To list various chemical route of synthesis of functional groups. To explain various	10.1,10.2,10.6,10.12
7-10	Chemistry of ketones and aldehydes: Structure, synthesis and various reactions	chemical reactions of organic functional groups. To compare the reactions involved with same or	16.1,2,4,7,12,14,16,21
11-14	Chemistry of amines: Structure, preparation and reactions of nitro, nitrile, azide, amide, imine. Rearrangements and reactions involving above	similar functional groups. To select the chemical reactions used for synthesis of compounds which involved multi	17.3,5,6,13,15,20,22
15-19	Chemistry of carboxylic acid and its derivatives: Structure, synthesis and reactions of carboxylic acids.	steps.	19.9,15,20.1,5,9,10-20.
20-21	Inorganic compound in pharmacy: Chemistry, preparation, properties and uses of various inorganic compounds used in therapeutics and as pharmaceutical aids.	To list the important inorganic compounds used in pharmaceuticals and able to identify their preparations and uses	RB:4 TB-2
22-34	Heterocyclic compounds: Nomenclature, synthesis & reactions of important heterocyclic molecules	To identify and name the heterocyclic compounds To explain methods for synthesis and properties of heterocyclic compounds. To categorize the drugs based on heterocyclic nucleus. To design synthetic route for drugs whose structure contains heterocyclic nucleus with sidechain/functional groups.	RB:3 Joule Mills

## 6. Evaluation:

Evaluation Component	Duration	Weightage (%)	Date & Time	Nature of Component	CO
Mid Sem Test	90 min	25	7/3 9.00 - 10.30AM	CB 10% OB 15%	CO 1 & 2
Test [Pre & Post Mid sem test]	30 min each	10	Tutorial hours	CB	CO-1 & 2
Surprise Quiz [3-4]	20 min each	15	Class hours	OB	CO-2
Lab Components*	-	15		OB & CB (5%)	-
Compre. Exam.	180 min	35	14/05 FN	OB	CO-1,2,3

\*Seriousness, sincerity & record 10%; Final lab quiz 5%

7. **Chamber consultation hours:** To be announced in class.

8. **Notices:** Notices concerning the course will be displayed on the pharmacy group notice board only.

9. **Make-Ups:** Generally, make-up will be considered for regular students only (**80% attendance IN LECTURE CLASSES**). Prior permission for all make ups are a must. For medical emergencies, requests have to be forwarded by the Chief Warden to the satisfaction of IC.

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**  
**PHA F241**