



**First Semester 2015-16
Course Handout (Part II)**

03/08/2015

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 G544
Course Title : ADVANCED PHARMACEUTICAL CHEMISTRY
Instructor-in-charge : HEMANT R. JADHAV
Instructors : Pankaj Wadhwa

A. Scope and Objective of the Course :

This course is designed to familiarize the students to stereochemical aspects of drugs and biological molecules, effect of stereochemistry on drug action and isomerism in various drugs. It also emphasizes on various rearrangements and name reactions useful in synthesis of bioactive molecules. This course will also cover examples related to the applications of rearrangements and name reactions involved in the synthesis of existing drugs.

B. Text Book :

1. Michael B. Smith, Jerry March, "March's Advanced Organic Chemistry: Reactions, Mechanisms, and Structure", 6th Edition, 2007, Wiley-Interscience
2. E. L. Eliel, "Stereochemistry of Carbon Compounds", 2006, Tata-McGraw Hill

C. Reference Books :

1. Morrison and Boyd, "Organic Chemistry", 6th Edition, 2001, Prentice Hall India Ltd.
Besides the above relevant information on the topics are also available in following:
2. Journal of Medicinal Chemistry-ACS-Different Volumes.
3. Chemical Reviews-ACS-Various Volumes

D. Course Plan:

Lecture	Objective	Topics to be covered	Reference
1-2	Stereochemistry in drug action	Optical isomerism due to asymmetric carbon atoms	TB 2: Chapter 2
3		Compounds with asymmetric carbon atoms	TB 2: Chapter 3
4-5		Racemic modification	TB 2: Chapter 4
6-7		Resolution of racemic mixtures	TB 2: Chapter 4
8-9		Absolute and relative Configuration	TB 2: Chapter 5, RB: 2 Chapter 10
10-11		Synthesis of optically active compounds	TB 2: Chapter 5
12	Stereochemistry of ring systems present in pharmaceuticals	stereoisomerism	TB 2: Chapter 7
13		Stability and ease of ring formation	TB 2: Chapter 7
14-15		Size and shape of six member rings and relation to activity	TB 2: Chapter 8
16-17		Stereoselective synthesis	TB 2: Chapter 15





18-19		Asymmetric synthesis	TB 1: Chapter 4
20	Rearrangement reactions and their applications to drug synthesis	Pinacol-pinacolone	TB 1: Chapter 18; Ref. 1, 3, 4.
21		Benzil-benzilic	
22		Hoffmann	
23		Curtius	
24		Lossen	
25		Bayer villagerand	
26		Wagner-Meervin	
27		Arndt-Eistert	
28		Beckmann	
29		Cope	
30		Benzidine	
31		Claisen-schmidt	
32	Name reactions and examples in drug synthesis	Oppenauer oxidation	TB 1: 10, 11, and 12; Ref. 3 and 4
33		Birch reduction	
34		Mannich reaction	
35		Witting reaction	
36		Schmidt reaction	
37		Wolf Krishner reduction	
38		Clemmenson reduction	
39		Aldol condensation	
40		Friedal Craft's	

E. Evaluation Scheme:

Component	Duration	Weightage (%)	Date & Time	Remarks
Mid-sem Test	90 min	30	5/10 10:00 - 11:30 AM	CB
Continuous assessment		40	Continuous	
Comprehensive Exam	180 min	30	1/12 AN	CB and OB

*Continuous assessment will be based on theory covered in the class. Topics and number will be announced in class. It will be in terms of home assignments, tutorials, projects, laboratory, viva-voce, class participation

Reading Assignments: Students are advised to read, collect additional information on the above mentioned topics from journals and other online sources.

Attendance: Although attendance is not compulsory, regularity in theory and practical classes will be decisive factor during grading, especially in borderline cases.

Chamber Consultation Hour: To be announced in the class.

Make-up policy: Generally make-up will be considered for regular students only.

Notices: Concerning this course will be displayed on Pharmacy N. B.

Instructor-in-Charge
PHA G544

