

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
INSTRUCTION DIVISION
FIRST SEMESTER 2015-2016
Course Handout Part II

Date: 03/08/2015

In addition to Part-I (General Handout for all courses appended to the timetable) this portion gives further specific details regarding the course.

Course No : PHA G618
Course Title : Retrosynthetic Analysis
Instructor-in-Charge : Dr. S. MURUGESAN

1. Scope & Objective of the Course

The course deals with the conversion of target molecule into readily available starting materials by means of appropriate disconnection approaches and is very useful in the synthesis of potent lifesaving drugs.

2. Text Books

- 1) Designing Organic Synthesis by Stuart Warren, John Wiley & Sons, IInd edn, 2002. New York. ISBN: 047199612.
- 2) Work book for organic synthesis: The disconnection approach by Stuart Warren & Paul Wyatt, Wiley Publishers, IInd edn, 2010. New York. ISBN: 978-0-470-7-2276.

3. Reference Books

- 1) Organic Synthesis: The disconnection approach by Stuart Warren & Paul Wyatt, Wiley Publishers, IInd edn, 2010. New York. ISBN: 978-0-470-7-12375.
- 2) The logic of Chemical Synthesis by E.J.Corey & Xue-Min Chelg, John Wiley & Sons Publishers, Ist edn, 1995. New York. ISBN: 0471115940.
- 3) Organic Synthesis by Christine Willis & Martin Wills, Oxford Science Publications, New York. Ist edn, 1996. ISBN: 0198557914.

4. Course Plan

Lecture No.	Topics to be covered	Objectives	Reference
1-3	Introduction & basic concepts of retrosynthetic analysis	Introduction to synthon, retrosynthesis, synthetic equivalents and molecular complexity	TB-1-1, RB-2-1&3-1,2
4-10	Methods & techniques to transform target molecules to precursors	Transform and Retrons, Types of Transforms, Selecting Transforms	TB-1-IJ, RB-2-1
11-22	Functional Group, Stereo chemical, Transform based & topological strategies involving organic reactions	Functional group as elements of complexity and strategy, Stereo chemical strategy, Transform guided retrosynthetic search, Structure goal and Topological strategies	TB-1-2, RB-2-2,3,4,5

23-27	Functional group interconversions	Significance of various functional group interconversions in the retrosynthesis	TB-1-IJ, RB-3-3
28-32	Reconnection & Disconnection approaches	One group and two group disconnection approaches, two group reconnection approaches	TB-1-I-B,C,D, RB-1-4,6,10,11,13 & 2-5
33-36	Acyclic & ring structure synthesis	Synthesis of alkene, alkyne, introduction to three and four membered ring synthesis	TB-1-IG,H, RB-1-15,16,29,30&2-13
37-40	Rearrangement reactions pertaining to the synthesis of selected compounds	Introduction to rearrangement, ring contraction and ring expansion reaction	RB-2-7,8&3-8

5. Evaluation

Component	Duration	Weightage (%)	Date & Time	Remarks
Mid term	90 min	30	5/10 4:00 - 5:30 PM	CB
Assignment (s)*		40		OB
Compre. Exam	3 hrs	30	2/12 AN	CB & OB

* Assignment(s) should be submitted in a standard report format as per deadline(s) that would be announced in the class. It may also include a viva and/ or a seminar presentation.

Reading Assignments: Students are advised to read, collect additional information on the above mentioned topics as per the given schedule.

Chamber Consultation hour: To be announced in the class.

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

Notices: Notices concerning the course will be displayed on the Pharmacy Group Notice Board only.

Make-Up's: Generally, make-up's are not given as a routine. It is solely dependent on the "genuineness" of the circumstance under which a student fails to appear in a scheduled evaluation component. However, the make-up application should be personally given to Instructor-in-Charge and not slipped into the chamber of the Instructor-in-Charge.

Instructor-in-Charge
PHA G618