



**ACADEMIC-GRADUATE STUDIES AND RESEARCH DIVISION**

**SECOND SEMESTER 2021-2022**

**Course Handout Part II**

13-01-2022

In addition to part I (general handout for all courses appended to the timetable) this portion gives specific details regarding the course.

**Course No.** : CHEM G551  
**Course Title** : Advanced Organic Chemistry  
**Instructor-In-Charge** : D Ramaiah

**1. Course Description:**

This course deals with various organic reactions viz., aromatic electrophilic and nucleophilic substitution reactions, nucleophilic addition reactions, oxidation and reduction reactions, enolates in organic synthesis, retrosynthetic analysis and multistep synthesis, protecting groups.

**2. Scope and objective of the course:**

The aim of this course is to give the students an overall view of the dynamics of organic chemistry, such as reaction mechanisms, retrosynthetic analysis, and chemo-, regio- and stereo-selectivity. This course also provides students a firm understanding of basic reactions of various organic compounds and the effect of structure on reactivity.

**3. Text Book:**

**TB1:** Michael B. Smith & Jerry March, Advanced Organic Chemistry, John Wiley & Sons, 6<sup>th</sup> ed., 2012.

**TB2:** Stuart Warren: Organic Synthesis: The Disconnection Approach: John Wiley & Sons, 2004.

**Reference Books:**

- (1) Paul Wyatt & Stuart Warren, Organic Synthesis: Strategy and Control, Wiley (2008).
- (2) Morrison and Boyd, Organic Chemistry, Prentice & Hall, 6<sup>th</sup> ed., 1992.
- (3) J. Clayden, N. Greeves, S. Warren, P. Wothers, Organic Chemistry, Oxford Univ. Press (Second South Asia Edition, 2012).

**4. Course Plan:**

Lec. No.	Learning Objectives	Topic(s) to be Covered	Chap(s). No(s).
1-5	Mechanisms, orientation, reactivity and reactions	Aromatic electrophilic substitution	<b>TB1:</b> Ch. 11
6-11	Mechanisms ( $S_N1$ , Benzyne), reactivity and	Aromatic nucleophilic substitution	<b>TB1:</b> Ch. 13

	reactions		
12-21	Mechanisms, orientation, reactivity and reactions	Nucleophilic addition reactions to carbon-carbon multiple and carbon- heteroatom multiple bonds.	<b>TB1:</b> Ch. 15 & 16
21-27	Application of various types of enolates in organic synthesis and multistep synthesis	Enolates in organic synthesis and multistep synthesis	<b>R1 :</b> Ch. 2
28-33	Mechanism of oxidation and reduction reactions in organic chemistry	Oxidation and reduction reactions	<b>TB1:</b> Ch. 19
34-42	Retrosynthetic analysis by disconnection approach	Retrosynthetic analysis and protecting groups	<b>TB2:</b> Ch. 1-8, Ch. 9

#### 5. Evaluation scheme:

Component	Duration	Weightage (%)	Date and Time	Remarks
Midsem Test	90 min	30	TBA	<b>Open Book</b>
Seminar I	25 min	15		
Seminar II	25 min	15		
Comprehensive Examination	120 min	40	TBA	<b>Open Book</b>

**6. Chamber consultancy hour:** To be announced.

**7. Notices:** Notices concerning the course will be displayed on the Chemistry Group notice board and/or CMS.

**8. 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.

**9. Make-up Policy:** Make up would be considered only for very **genuine reasons (hospitalization with appropriate documentary proof)**, and any other extreme emergency situations which would be decided by the team of instructors.

**Instructor-in-charge**  
**CHEM G551**

