



**ACADEMIC-GRADUATE STUDIES AND RESEARCH DIVISION**

**FIRST SEMESTER 2021-2022**

**Course Handout Part II**

18-08-2021

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  
**Instructor** : Tanmay Chatterjee

**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.

**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 stereoselectivity. 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).
1-3	Mechanisms, orientation, reactivity and reactions	Aromatic electrophilic substitution	<b>TB1:</b> Ch. 11
4-7	Mechanisms (S <sub>N</sub> 1,	Aromatic nucleophilic	<b>TB1:</b> Ch. 13

	Benzyne), reactivity and reactions	substitution	
8-12	Mechanisms, orientation, reactivity and reactions	Nucleophilic addition reactions to carbon-carbon multiple and carbon- heteroatom multiple bonds.	<b>TB1:</b> Ch. 15 & 16
13-21	Application of various types of enolates in organic synthesis and multistep synthesis	Enolates in organic synthesis and multistep synthesis	<b>R1 :</b> Ch. 2
22-27	Mechanism of oxidation and reduction reactions in organic chemistry	Oxidation and reduction reactions	<b>TB1:</b> Ch. 19
28-42	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	20 min	20		<b>Open Book</b>
Assignment	-	15	Continuous	<b>Open Book</b>
Comprehensive Examination	120 min	35	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**

