

Course Title: Reactive Intermediates

Semeste: VII
Course Code: CH-471
Credit Hours: 3-0
Prerequisite: Nil

Course Objectives

1. Students will acquire knowledge about the rearrangement reactions and their types including some name reactions, and different intermediates involved in organic reactions. Students are expected to learn the underlying concepts and synthetic applications.

Course Contents

2. Reactive Intermediates. Reactive intermediates like, carbocations, carbanions, freeradicals, carbenes, nitrenes, and arynes, their generation, stability, reactions and synthetic applications. Chemistry of Enolates and Enols: Acidity of carbonyl compounds, enolization of carbonyl compounds, α -halogenation of carbonyl compounds; aldol-addition and aldol condensation, condensation reactions involving ester enolate ions, alkylation of ester enolate ions.
3. Rearrangement Reactions. Types of rearrangements, general mechanisms of nucleophilic, free radical and electrophilic rearrangements, hydrogen and/or carbon migration to electron-deficient carbon, nitrogen and oxygen, carbon migration to electron-rich carbon, aromatic rearrangements, inter- and intra-molecular carbon migration from oxygen to carbon.

Course Outcomes

4. After completion this course, students will have knowledge about reactive intermediates like, carbocation, carbanions, free radicals, carbenes, nitrenes, then through these reactive intermediates to understand the mechanisms of different organic reactions.

Text book Clayden, J., Greeves, N. and Warren, S., Organic Chemistry, 2nd ed., Oxford

5. University Press, (2012).

6. Recommended Books:

- Coxon, J. M. and Norman, R.O.C., Principles of Organic Synthesis, 3rd ed., Chapman and Hall, UK, (1993).
- Brown, W. H., Fotte, C. S., Iverson, B. L. and Anslyn, E. V., Organic Chemistry, 6th ed., Brooks/Cole Learning, (2012).
- John, E. M., Organic Chemistry, 8th ed., Brooks/Cole Publishing Co., USA, (2012).

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4. Robert, T. M. and Robert, N. B., Organic Chemistry, 6th ed., Prentice Hall, New Jersey, (1992).44