

Programme: **M.Sc. Chemistry**

Course Code: **CHCB-402 (for Part-I students)**

Title of the course: **Bridge Course in organic chemistry**

Number of Credits: **01** Total Hours: **15** Effective from AY: **2022-23**

<i>Prerequisites for the course:</i>	Should have studied B. Sc. (Chemistry)	
<i>Course Objective:</i>	<ol style="list-style-type: none"> 1. To understand various principles of organic chemistry. 2. To understand the importance of chirality in organic syntheses. 3. To understand stereoselective reactions. 4. To understand oxidation and reduction reactions. 	
<i>Course Outcome:</i>	<ol style="list-style-type: none"> 1. Students will be able to explain basic stereochemistry. 2. Students will be able to apply knowledge of basic reaction mechanisms in organic transformation. 3. Students will be able to apply basic concepts of oxidation and reduction in organic synthesis. 	
<i>Content</i>		<i>Hrs</i>
1. Fundamentals of organic chemistry Electron movement with arrows, half and double headed arrows (Cleavage of bonds: homolysis and heterolysis) in organic reaction mechanisms; inductive effect, electromeric effect, resonance and hyperconjugation, steric hindrance, hydrogen bonding; reactivity of organic molecules: nucleophiles and electrophiles; reactive intermediates: carbocations, carbanions and free radicals; strength of organic acids and bases; aromaticity: benzenoids and Hückel's rule.		08
2. Stereochemistry Conformations with respect to butane and cyclohexane; interconversion of wedge formula, Newmann, Sawhorse and Fischer representations; CIP Rules: R/S configurations.		03
3. Substitution, Elimination and addition reactions Substitution and elimination reactions (S_N1 , S_N2 , E1 and E2), addition of different groups on olefins.		02
4. Oxidation and reduction reactions		02

Basic concepts and some examples.	
<i>Pedagogy</i>	Mainly lectures and tutorials. Seminars/assignments/presentations/self-study or a combination of some of these can be used. ICT mode should be preferred. Sessions should be interactive to enable peer group learning.
<i>Text Books/References / Readings</i>	<ol style="list-style-type: none"> 1. D. Nassipuri, Stereochemistry of Organic compounds - Principles and Application, Wiley Eastern Limited, New Academic Science Limited, 2013, 4th Ed. 2. E. L. Eliel, Stereochemistry of carbon compounds, Tata MacGraw Hill Publishing Company Ltd. 1990 3. J. March, Advanced Organic Chemistry: Reaction, Mechanism and Structure, Wiley, 2010, 4th Ed. 4. J. Clayden, N. Greeves, S. Warren & Wothers, Organic Chemistry, Oxford University Press, 2012, 2nd Ed. 5. I. L. Finar Stereochemistry and Chemistry of Natural products, ELBS, Longmans, Vol. 2, 1963, 3rd Ed. 6. V. M. Potapov, Stereochemistry, MIR Publishers, Moscow, 1979 7. E. S. Gould et al., Mechanism and structure in Organic Chemistry, 1965 8. F. A. Carey, Organic Chemistry, 2000, 4th Ed. 9. S. H. Pine, Organic Chemistry, McGraw-Hill International Edn. 2010, 5th Ed. 10. F. A. Carey and R.J. Sundberg, Advanced Organic Chemistry, Vol. I & II. Plenum Press, 1977 11. J. M. Harris & C.C. Wamser, Fundamentals of Organic Reaction Mechanisms, John Wiley & Sons. Inc. 1976 12. F. M. Menger, D.J. Goldsmith & L. Mendell, Organic Chemistry, A concise approach, 1975, 2nd Ed.