

1.	Title of the course	Stereochemistry and Organic Synthesis
2.	Course number	CY508L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To CY5204/10
6.	To be offered by	Department of Chemistry
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	Course Objective(s): To develop the concept of stereochemical features of organic molecules that explains many physical and chemical properties on the basis of their spatial orientations. To provide special attention to the organic transformations and synthesis techniques of natural/biological products that motivate students to analyze various research problems.	
10.	Course Content: Static stereochemistry : representations, chirality, symmetry elements, enantiomerism and diastereomerism, nomenclature, racemic mixture, conformational analysis of small molecules; Dynamic stereochemistry : conformation and reactivity, Curtin-Hammett principle, Wenstein-Elliel equations; Nucleophilic substitution reaction, epoxide ring, addition to double bonds, elimination reactions, pyrolytic syn elimination, oxidation of cyclohexanols, neighboring group participation; Organic Synthesis: functional group interconversion, common catalysts and reagents, Chemo, regio and stereoselective transformations; Retrosynthesis, disconnection, synthons, linear and convergent synthesis, umpolung of reactivity and protecting groups; Asymmetric synthesis: chiral auxiliaries, methods of asymmetric induction, determination of enantiomeric and diastereomeric excess, enantio-discrimination, Resolution.	
11.	Textbook(s): 1. Eliel E L and Wilen S H, <i>Stereochemistry of Organic Compounds</i> , Wiley (2008). 2. Warren S and Wyatt P, <i>Organic Synthesis: The Disconnection Approach</i> , Willey (2011).	
12.	Reference(s): 1. Carruthers W and Coldham I, <i>Modern Methods of Organic Synthesis</i> , Cambridge University Press (2004). 2. March J, <i>Advanced Organic Chemistry: Reactions, Mechanisms, and Structure</i> , Wiley (1992). 3. Morrison R T, Boyd R N and Bhattacharjee S K, <i>Organic Chemistry</i> , Pearson Education India (2010). 4. Nasispuri D, <i>Stereochemistry of Organic Compounds: Principles and Applications</i> , New Age International Publisher (2018).	