

1.	Title of the course	Modern Methods for Asymmetric Synthesis
2.	Course number	CY610L
3.	Structure of credits (L-T-P-C)	3-0-0-3
4.	New course/modification to	New
5.	To be offered by	Chemistry
6.	Prerequisite	CoT
7.	Course Objective(s): To impart knowledge in frontier aspects of organic synthesis such as modern techniques for asymmetric synthesis. To discuss enantioselective synthesis by organocatalysis, transition metal catalysis, and radical chemistry.	
8.	Course Content: Principles of asymmetric induction; Description of catalysis, homogeneous and heterogeneous catalysis, asymmetric catalysis; Organocatalysis: principle, various activation modes using chiral amine, N-heterocyclic carbene, phosphine, hydrogen-bonding, phase-transfer, Brønsted acid, and ion-pairing catalysis; Transition metal catalysis: concept of ligand design, effects of ligands on reactivity and selectivity on asymmetric hydrogenation, hydroformylation, nucleophilic allylation, and coupling reactions; Radicals in enantioselective catalysis.	
9.	Textbook(s): 1. Kozlowski M C and Walsh P J, Fundamentals of Asymmetric Catalysis, University Science Books (2009). 2. Corey E J and Kurti L, Enantioselective Chemical Synthesis: Methods, Logic and Practice, Academic Press (2013).	
10.	Reference(s): 1. Hartwig J F, Organotransition Metal Catalysis: From Bonding to Catalysis, University Science Books (2010). 2. Zard S J, Radical Reactions in Organic Synthesis, Oxford University Press (2003).	