Semester	JAN 2022
Open to semester	6,8,12,22
Course code	**CH3224/CH6224**
Course title	**Organic Synthesis-I**
Credits	4 /4
Course Coordinator & participating faculty (if any)	B. Gnanaprakasam
Nature of Course	Lectures
Pre-requisites	Physical Organic Chemistry Advisable
Objectives (goals, type of students for whom useful, outcome etc)	To gain exposure to various commonly used reagents for functional group transformations, their mechanisms, and applications. Reactions such as oxidations, reductions, substitutions, additions & carbon-carbon bond formations will be discussed. The expected outcome of this course would be strengthening of synthesis foundations; students would be in a position to begin conceptual building of synthesizing complex molecular architectures.
Course contents (details of topics /sections with no. of lectures for each)	Functional Group Interconversions (9 hrs): Nucleophilic Substitution, Interconversion of carboxylic acid derivatives; Protecting and Deprotecting Functional Groups; Protection of hydroxyl-, amino-, carbonyl-, and carboxylic acid-groups. Oxidations (7 hrs): Oxidation of alcohols to aldehydes and ketones, Reagents and procedures for alcohol oxidation, Chemoselective agents for oxidizing alcohols, Oxidation procedures to carboxylic acids, Allylic oxidation of alkenes. Reductions (7 hrs): Electrophilic Additions, Cyclizations, Reductions: Hydrogenations. Organometallic Reagents (8 hrs): Organolithium reagents, Organomagnesium reagents, Organotitanium reagents, Organosilicon reagents, Organocopper reagents, Organocerium reagents, Organocopper reagents, Organochromium reagents, organozinc reagents, organosilicon reagents Reactions of Carbon Nucleophiles (9 hrs): Formation of carbon-carbon single bond via enolates: 1,3-Dicarbonyl and related compounds, Direct alkylations of simple enolates. Imines and hydrazone anions, enamines, Robinson annulations.

	Quiz/assignments/Problem solving session: (4 hrs)
Evaluation /assessment	End-Sem Examination-40% Mid-Sem Examination-40% Others-20%
Suggested readings (with full list of authors, publisher, year, edn etc.)	1. Organic Chemistry by J. Clayden, N. Greeves, S. Warren, P. Wothers; Oxford Press, Second Edn. 2. Modern Organic Synthesis An Introduction, by G. S. Zweifel and M. H. Nantz; W. H. Freeman, First Edn 3. Advanced Organic Chemistry: Part B (Reaction and Synthesis) by F. A. Carey and R. J. Sundberg; Springer, Fifth Edn 4. March's Advanced Organic Chemistry, by Michael B. Smith and Jerry March; Wiley India, 2012, Sixth Edn