

1.	Title of the Course	Pericyclic Reactions and Photochemistry
2.	Course Number	CY6024
3.	Status of the Course	Elective
4.	Structure of Credits	3-0-0-3
5.	Offered To	PG
6.	New Course/Modification to	New
7.	To be Offered by	Department of Chemistry
8.	To take effect from	July 2020
9.	Prerequisite	Nil
10.	Whether approved by the Department	Yes
11.	Course Objective: To impart knowledge on chemical reactions that involve passage through a cyclic transition state, where a concerted shift of electrons plays a pivotal role. To introduce the concept of light-matter interaction that leads to chemical reactions, generally caused by absorption of UV-Visible and IR radiation.	
12.	Course Content: Pericyclic Reaction: molecular orbitals of acyclic conjugated systems, thermal and photochemical reactions, electrocyclic reactions, cycloaddition reactions and sigmatropic rearrangements; Frontier MO approach, perturbation molecular orbital method, correlation diagram; Woodward-Hoffmann selection rules; Reactivity, regioselectivity and periselectivity in cycloaddition reactions; Sommelet-Hauser, Cope and Claisen rearrangements, Ene reaction, Wittig rearrangement; Photochemistry: basic principles, Jablonski diagram, excited state of some organic molecules, cis-trans mechanism, reactions of carbonyl, olefin and conjugated carbonyl compounds, photo-induced functionalization involving Norrish type I and II, Paternobuchi reaction, Di-pi methane rearrangement; Photo chemistry of aromatic compounds.	
13.	Text book(s): 1. Coyle J D, <i>Introduction to Organic Photochemistry</i> , Wiley (1986). 2. Sankararaman S, <i>Pericyclic Reactions - A Textbook: Reactions, Applications And Theory</i> , Wiley India (2015).	
14.	Reference(s): 1. Fleming I, <i>Pericyclic Reactions</i> , Oxford University Press (2015). 2. Kalaivani S, <i>Organic Photochemistry and Pericyclic Reactions</i> , MJP Publishers (2013). 3. Wayne R P, <i>Principles and Applications of Photochemistry</i> , Oxford Science Publications (1988). 4. Woodward R B and Hoffmann R, <i>The Conservation of Orbital Symmetry</i> , Academic Press (1971).	