

Module code	SC-4325		
Module Title	Reactive Intermediates in Organic Syntheses		
Degree/Diploma	Bachelor of Science (Chemistry)		
Type of Module	Major Option		
Modular Credits	2	Total student Workload	4 hours / week
		Contact hours	2 hours/ week
Prerequisite	None		
Anti-requisite	None		
Aims			
The module is designed for students to gain knowledge on selected reactive intermediates in organic synthesis and learn the basic concepts of organic photochemistry.			
Learning Outcomes			
<i>On successful completion of this module, a student will be expected to be able to:</i>			
Lower order:	40%	- gain knowledge on the formation, reactivity and stability of free radicals and know the basic concepts of organic photochemistry and mechanism reactions involved	
Middle order:	40%	- to be able to explain the structure, bonding, generation and reactivity of carbenes and nitrenes, intra- and intermolecular addition reaction of carbenes to double bonds	
Higher order:	20%	- work independently and collaboratively in a team	
Module Contents			
-Radicals: General principles of free radical chain reactions; reactivity and stability of free radicals; the use of free radicals in carbon-carbon bond formation; introduction to the various radical initiators.			
-Carbenes: Formation of singlet and triplet carbenes as well as nitrenes and their addition to carbon carbon double bonds; mechanisms of 1,4- and 1,6-addition reactions; stereochemistry of addition of carbene and nitrene to double bonds; reactivity in addition reactions; insertion reaction and rearrangement.			
-Photochemistry: Consequences of absorption of light by molecules, principles and reactions of carbon-carbon double bonds; diazo compounds and azides; the photochemistry of carbonyl compounds will also be discussed including Norrish Type-I, Norrish Type-II processes, hydrogen abstraction and the Paterno-Büchi reaction.			
Assessment	Formative assessment	Tutorial and feedback.	
	Summative assessment	Examination: 60% Coursework: 40% - 1 written assignment (10%) - 1 oral presentation (10%) - 2 class tests (20%)	