

Course Code & Title : **CM2031 Organic and Bioorganic Chemistry**

Academic Units : 3 AU

Pre-requisite : CM1031 or CM9001 or by permission

Course Description :

### **CM2031 Organic and Bioorganic Chemistry**

[Lectures: 39; Tutorial: 5; Pre-requisite: CM1031 or CM9001 or by permission; Academic Units: 3]

#### **Learning Objectives**

- To introduce ideas about more complex molecules than previously discussed, about how to plan a synthesis.
- To discuss reaction mechanisms in greater depth and to extend previous discussion of radical.

#### **Content**

Topics covered include functional group transformations, disconnection approach to synthesis, synthesis and reactivity of polyfunctional organic molecules, heteroaromatic compounds, free radical reactions, pericyclic reactions, stereochemistry and reaction mechanisms.

#### **Course Outline**

S/N	Topic	Lecture Hours	Tutorial Hours
1	Nucleophilic Substitution	2	0
2	Introduction to Retrosynthesis	2	0.5
3	Aromatic and Heteroaromatic compounds; nucleophilic aromatic substitution	2	0.5
4	Alkenes and Epoxides; diastereoselectivity	2	0.5
5	Acetylides and other carbanions in retrosynthesis	2	0.5
6	Nucleophilic addition to carbonyl compounds	2	0
7	Malonates and beta-ketoesters, including hard soft principle	2	0.5
8	Simple enolates	2	0
9	Kinetic and Thermodynamic enolates	2	0.5
10	Michael additions	2	0.5
11	Aldol and related reactions	2	0.5
12	Umpolung	2	0
13	Redox chemistry	4	0.5
14	Radical chemistry	3	0
15	Alkene Synthesis (Wittig and related Reactions)	2	0.5
16	The Diels-Alder reaction	3	0
17	Protecting groups	3	0

#### **Learning Outcomes**

- Students will be able to devise logical, multi-step syntheses of simple
- The ability of the students to draw reaction mechanisms will be enhanced
- Students will understand radical and pericyclic reactions and be able to predict when these processes are favoured.

#### **Student Assessment**

Students will be assessed by

- A final 2-hour written examination (60%)
- Continuous assessment (40%)

