FORMEN CHRISTIAN COLLEGE, LAHORE
(A Chartered University)
Chemistry Department

Organic Chemistry 1: CHEM 261
Credits: 04 (3+1)
Prerequisite
Intermediate or A Level Chemistry
Course Instructor: Dr Seemal Jelani
Email: seemaljelani@fccollege.edu.pk
Visiting hours: 12:00-1:00 pm (except Wednesday)

Course Objective:

At the end of the course a student is expected to:

1) Acquire a fundamental understanding of organic reactions and their mechanisms
2) Have quite a deep understanding of stereoselective and enantioselective reactions in organic chemistry
3) Have developed the ability to apply their knowledge to solve problems involving various types of reactions.
4) Be capable of linking structure and reactivity in organic molecules, such as conditions controlling SN and E; SN1 and SN2, and so on.
5) Be capable of organizing future learning and research
6) Understand "The Path to Sustainable Catalysis and Green Chemistry.

Catalogue Course Content

Reaction mechanisms including free radical, electrophilic and nucleophilic substitution, addition and elimination reactions, chemistry of alkyl halides, amines, and organometallic compounds, catalytic reactions and their importance.

Reading Material:

Organic Chemistry by Brown and Foote 7th Ed, Chapter 8, 9, 15, 23, 24

Evaluation criteria:

No	Rubric	Weightage %
1	Attendance & Class participation	05
3	Quizzes	10
4	Assignment	10
5	Lab-assignment	10
6	Presentation	10
7	Mid exam	15
7	Final lab exam	15
8	Final Exam	25
9	Total	100

Eligibility criteria

A student must be regular and punctual. Generally, he or she should attend all classes. 80 percent attendance is expected to sit for the final exam.

Week Plan/Semester Breakup

Week	Course content	Assessment
Week-01	Introduction to Organic Chemistry I Discussing course outlines Students' introduction Nucleophilic substitution reaction Types of SN reactions	
Week -02	Stereoselectivity in SN reactions Factors affecting the SN mechanism Chapter problems	Quiz-01 Assignment 1
Week-03	**Elimination Reactions** Types of E reactions Mechanism Stereoselectivity and stereospecificity Comparison of SN and E Reactions Factors effecting SN & E Reactions Chapter problems	
Week-04	**Chemistry of Alkyl Halides** Nomenclature, Bond Length and bond strength**,** Energetics Nomenclature, Preparation by halogenation of Alkanes,	Quiz-02
Week-05	Mechanism of Halogenation of Alkanes Addition reactions to Carbon-Carbon multiple bond Electrophilic addition reactions Regioselectivity and carbocation stability	Quiz-03
Week-6	Stereochemistry of addition reactions Allylic Halogenation Autoxidation Chapter Problems	Assignment
Week-07	**Chemistry of Amines** Nomenclature, Physical Properties, Preparation Reactions of amines (with Nitrous Acid, Diazonium Salt), Hofmann Elimination, Cope Elimination) Chapter problems	
Week -08	**Organometallic compounds** Introduction and general properties Organolithium and organmagnesium compounds Synthesis of RLi and RMgX Strong base or strong nucleophiles	**Mid Exam** An academic visit that must be approved by the visit site
Week-09	**Organometallic compounds** Heck, Stile and Suzuki reactions Gilman reagent, preparation and applications Coupling reactions and their applications in organic synthesis	Quiz-04
Week-10	Alkene Metathesis reaction	

	Applications of alkene metathesis reaction Chapter problems	
Week-11	**Catalysis** Introduction to catalysis Homogeneous and heterogeneous catalysis Metals, Metal complexes, Bio catalysis and organocatalysis	Assignment (Exercise for chemical synthesis) Quiz-05
Week-12	Organocatalysis and its applications Diastereoselective reactions Enantioselective reactions	
Week-13	Catalysis and green chemistry The Role of Catalysis Alternative Reaction Media; Biocatalysis brief introduction to Catalytic Reductions, Catalytic Oxidations	**Academic writing** **Latest article on** Catalysis and green chemistry
Week-14	Chemicals from Renewable Raw Materials Green Chemistry: The Road to Sustainability Catalysis and Green Chemistry	Quiz-06
Week-15	Presentation Topic: Catalysis and green chemistry	Presentation
Week-16	Final Exam	