Course Specifications

General Information

Course name	Organic Chemistry(1)
Course number	CHEM2305
Faculty	
Department	
Course type	Major Needs
Course level	2
Credit hours (theoretical)	3
Credit hours (practical)	0
Course Prerequisites	

Course Objectives

1 - The objective of the course is for students to develop an understanding and appreciation of both structure and chemical transformations of organic molecules. Students will acquire basic concepts of electronic structure and be able to apply them to solve problems from various areas of organic chemistry, including stereochemistry, reactivity patterns and synthesis. Improvements in learning strategies, critical-thinking, and problem-solving skills are an expected outcome. Also, this course includes the following parts: Introduction to organic chemistry, structure, nomenclature, physical properties, methods of preparation and reactions of alkanes, steriochemistry of carbon compounds, alkyl halides, alcohols preparation and reactions, ethers and epoxides. Alkenes preparation and their reactions.

Course Contents

1 - 1. Structure and properties • Chemical Bonding (ionic bonds, covalent bonds) • Valence-bond theory (hybridization) • Resonance • Electronegativity, dipole moments • Acids and bases 2. Alkanes • Functional groups • Nomenclature • Conformational analysis of alkanes and cycloalkanes (strain) 3. Stereochemistry I. Stereoisomers •Optical activity - enantiomers • Diastereomers • Absolute configuration 4. Nucleophilic aliphatic substitution • SN1 and SN2 • E1 and E2 • Effects of solvent, substrate structure, and nucleophile (base) on reactivity 5. Alcohols and Ethers • Hydrogen bonding, acidity, basicity • Preparation of alcohols • Reactions of alcohols • Williamson synthesis • Cyclic ethers • Reactions of ethers and epoxides 6. Roles of solvent: secondary bonding 7. Alkenes I: structure and properties 8. Alkenes II: reactions • Addition of halogens and water • Reductions (mechanisms excluded) and oxidation, including hydroxylation and oxidative cleavage 9. Stereochemistry II. Stereoselective and stereospecific reactions

Teaching and Learning Methods

1 - Lectures and discussions.

Students Assessment

Assessment Method	TIME	MARKS
Final exam 50% Carry marks 30% Assignments 15% Attendance and participation 5%	16 weeks	100

Books and References

Essential books	Organic Chemistry, 6th Edition, by Robert T. Morrison and Robert N. Boyd

Knowledge and Skills Matrix

Main Course Contents	Study Week	Knowledge and Understanding	Intellectual Skills	Professional Skills	General Skill
General and specific properties of alkanes and alkenes		Knowledge and Understanding of the general and specific properties of alkanes and alkenes	Critical, analytical, synthesising and problem-solving skills		
				When we talk about work skill, we refer to a specific term for describing the skills and knowledge that a person owns to work efficiently	we refer to a general term for describing the skills and knowledge that a person owns to work efficiently