COURSE DESCRIPTIONS

Faculty	Science				
Department	Chemistry			**NQF level**	2
Course Title	Organic chemistry (1)	**Code**	122201	**Prerequisite**	
Credit Hours	3	**Theory**	3	**Practical**	
Course Leader	**Mohammad Alidmat**	**email**	m.idmat@jadara.edu.jo		
Lecturers	**Mohammad Alidmat**	**emails**	m.idmat@jadara.edu.jo		
Lecture time	10-11.30	**Classroom**	D306	**Attendance**	Fulltime
Semester	First_2025/2026	**Production**	2025	**Updated**	2025
Type of Teaching	✓Blended				

Short Description

This course provides the basic knowledge in hydrocarbons including: alkanes, cycloalkanes, alkenes, dienes and alkynes ((IUPAC names, stereochemistry and reactions). In addition to substitution and elimination reactions of alkyl halides..

Course Objectives

1- Demonstrates knowledge of the properties, importance, and reactivity of some common functional groups: alkanes, alkenes, alkynes, alkyl halides.
2- Identify and name organic compounds, using the proper nomenclature.
3- Draw structures (condensed and structural) of compounds.
4- Understanding of organic chemical reactions and their mechanisms
5- Demonstrate an understanding of chirality and stereochemistry.
6- Demonstrate a knowledge nucleophilic elimination and substitution reactions

Learning Outcomes

A. Knowledge - Theoretical Understanding

a1. Naming of simple organic compounds.

B. Knowledge - Practical Application

A2. will be able recall major principles and concepts in organic chemistry
A3. Explain atomic structure, bonding in organic chemistry, chemical reactions and synthesis of organic compounds.
A4. will be able name organic compounds either by common names or systematic (IUPAC) names

C. Skills – Generic Problem Solving and Analytical Skills

b1. Determine properties of aliphatic hydrocarbons and their reactions. In addition to, some physical organic behaviour of organic compounds.

D. Skills – Communication, ICT, and Numeracy

b2. will be able use previous knowledge to identify products of chemical reactions important in organic chemistry.
E. Competence: Autonomy, Responsibility, and Context
Teaching and Learning Methods
✓ Face to Face Lectures ☐ Brain Storming ☐ Synchronous remote ✓ Asynchronous remote ✓ Using Video ✓ Discussions ☐ Research Project ☐ Problem solving
Assessment Methods
✓ Formative Assessment ✓ Quiz ✓ Homework ✓ Midterm ✓ Final Exam

Course Contents					
Week	**Hours**	**CLOs**	**Topics**	**Teaching & Learning Methods**	**Assessment Methods**
1.	3	a1, b1	Introduction, sp3, sp2 & sp hybridization Drawing chemical Structures Polar bonds	Discussion Brainstorming Advanced Lecture (Presentations)	Short quizzes, Exams
2.	3	a1, a2	Formal charge, resonance structures Alkyl groups	Discussion Brainstorming	Short quizzes, homework
3.	3	a3, b1, b2	Isomerism Nomenclature of alkanes Physical properties of alkanes	Advanced Lecture (Presentations) Discussion Brainstorming	quizzes - homework – exams
4.	3	a1, a2, b1,a3, a4, b3	Conformations of alkanes Nomenclature of cycloalkanes Ring strain	Advanced Lecture (Presentations) Brainstorming	quizzes - homework – exams

5.	3	a1, a2, b2,a3, a4, b2	Conformation of cycloalkanes Conformation of substituted cyclohexane Optical activity	Advanced Lecture (Presentations) Brainstorming	quizzes - homework – exams
6.	3	a2, b2	Chiral and achiral objects R & S convention Enantiomers	Advanced Lecture (Presentations) Using instructional technologies	quizzes - homework – exams
7.	3	a2, a3,a4, b1, b2	Diastereomers Degree of unsaturation Nomenclature of alkenes & Cis-trans isomers	Advanced Lecture (Presentations) Using instructional technologies	quizzes - homework – exams
8	3	a2, a3, a4, b1, b2	E-Z convention and Stability of alkenes Addition reactions & Mechanism of electrophilic addition Hammond postulate & carbocation rearrangement	Advanced Lecture (Presentations) Using instructional technologies	quizzes – homework – exams
9	3	a2, a3, a4, b1, b2	Synthesis of alkenes & addition of hydrogen Addition of halogens and water Oxymercuration & hydroboration	Advanced Lecture (Presentations) Using instructional technologies	quizzes – homework – exams
10	3	a2, a3, , b1	Hydroxylation and ozonolysis KMnO4 oxidation & stereochemistry of addition reactions Alkenes: Revision	Advanced Lecture (Presentations) Using instructional technologies	quizzes - homework – exams
11	3	a2, a3, b2	Alkynes: Nomenclature and synthesis Addition reactions Reduction of alkynes	Advanced Lecture (Presentations) Using instructional technologies	quizzes - homework – exams
12	3	a2, a3, b2	Acidity of alkynes Halogenation of alkanes	Advanced Lecture (Presentations)	quizzes - homework – exams

			Reactivity of hydrogens & allylic bromination	Using instructional technologies	
13	3	a1, a2, a3,a4 b1,b2	Organometallic compounds SN2 reactions SN1 reactions	Advanced Lecture (Presentations) Using instructional technologies	quizzes - homework – exams
14	3	a1, a2, a3, a4, b1,b2	Nucleophiles and leaving groups SN1 & SN2 in comparison E1 & E2 reactions	Advanced Lecture (Presentations) Using instructional technologies	quizzes - homework – exams
15	3	a1, a2, a3, a4, b1,b2	Substitution and elimination in competition Structure and Reactions of Dienes UV spectroscopy		
16			Final exam		

Infrastructure	
Textbook	Organic Chemistry, by McMurry10th edition, 2023 .
References	• ***www.emedicine.com*** • ***www.sciencedirect.com*** • ***www.pubmed.com*** • Lecture handouts • Internet: there are many websites that provide valuable data related to organic chemistry including research paper, books, animation, etc. you can find more of these websites by searching in the internet using a suitable searching key. Many websites will be posted on E-learning during the semester.
Required reading	Textbook is obligatory and required by the students
Electronic materials	Provided to the students through JU e-learning website.
Other	In addition to the above, the students will be provided with handouts by the lecturer.

Course Assessment Plan			
Assessment Method	**Grade**	**CLOs**	

			a1	a2	a3	a4	b1	b2	b3
First(Midterm)		30%	6	8	1	0	7	8	0
Second (if applicable)									
Final Exam		40%	5	7	5	5	4	7	7
Coursework									
Coursework assessment methods	Assignments	15%	2	2	2	0	2	2	2
	Case study								
	Discussion and interaction								
	Group work activities								
	Labtests and assignments								
	Presentations								
	Quizzes	15%	3	3	3	0	3	3	3
Total		100%	16	20	11	5	16	20	12

Plagiarism
Plagiarism is claiming that someone else's work is your own. The department has a strict policy regarding plagiarism and, if plagiarism is indeed discovered, this policy will be applied. Note that punishments apply also to anyone assisting another to commit plagiarism (for example by knowingly allowing someone to copy your code). Plagiarism is different from group work in which a number of individuals share ideas on how to carry out the coursework. You are strongly encouraged to work in small groups, and you will certainly not be penalized for doing so. This means that you may work together on the program. What is important is that you have a full understanding of all aspects of the completed program. In order to allow proper assessment that this is indeed the case, you must adhere strictly to the course work requirements as outlined above and detailed in the coursework problem description. These requirements are in place to encourage individual understanding, facilitate individual assessment, and deter plagiarism.