

## Course E-Syllabus

1	<b>Course title</b>	Organic chemistry
2	<b>Course number</b>	3325055
3	<b>Credit hours</b>	3
	<b>Contact hours (theory, practical)</b>	3,3
4	<b>Prerequisites/corequisites</b>	5502102-5502101
5	<b>Program title</b>	Bachelor Program in Biological sciences
6	<b>Program code</b>	
7	<b>Awarding institution</b>	Jordan university
8	<b>School</b>	Basic and Marine Sciences
9	<b>Department</b>	Biological sciences
10	<b>Level of course</b>	second year
11	<b>Year of study and semester (s)</b>	2019-2020 second semester
12	<b>Final Qualification</b>	Bachelor
13	<b>Other department (s) involved in teaching the course</b>	
14	<b>Language of Instruction</b>	English
15	<b>Teaching methodology</b>	<input type="checkbox"/> Blended <input checked="" type="checkbox"/> Online
16	<b>Electronic platform(s)</b>	<input checked="" type="checkbox"/> Moodle <input checked="" type="checkbox"/> Microsoft Teams <input type="checkbox"/> Skype <input checked="" type="checkbox"/> Zoom <input type="checkbox"/> Others...facebook.....
17	<b>Date of production/revision</b>	

### 18 Course Coordinator:

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### 19 Other instructors:

Name:  
Office number:  
Phone number:  
Email:

Name:  
Office number:  
Phone number:  
Email:

## 20 Course Description:

As stated in the approved study plan.

Structure and bonding, Bonding and molecular properties, the nature of organic compounds: Alkanes and cycloalkanes, Stereochemistry of alkanes and cycloalkanes, An overview of organic reactions, alkanes: Structure and reactivity, alkenes: Reactions and synthesis, Alkynes, Stereochemistry, Alkyl halides. Reactions of alkyl halides: Nucleophilic substitution and eliminations reaction

## 21 Course aims and outcomes:

#### A- Aims:

Learning objectives during Organic Chemistry include student understanding of: 1. The geometries and structures of carbon-based compounds, the tetra valence of carbon atoms, and the local geometries that result from sp, sp<sup>2</sup>, and sp<sup>3</sup> hybridization. 2. The common and important functional groups in organic compounds. 3. The composition and structures of hydrocarbon compounds and geometric isomerism. 4. Stereoisomerism; chirality of tetra-substituted carbon atoms; R and S enantiomers; and diastereoisomerism. 5. The standard organic chemistry reaction mechanisms: substitution, elimination, and addition reactions. 6. The preparation, structures, and reactions of alkyl halide compounds. The reactivity of electron deficient carbons. Nucleophilicity and structures of nucleophiles. 7. The preparation, structures, and reactions of alkene and alkyne compounds.

#### B- Intended Learning Outcomes (ILOs):

Upon successful completion of this course students will be able to ...

- 1- remember General chemistry: the structure of an atom, electronic configuration, ionic and covalent bonds Lewis structures, formal charge, atomic orbital and hybridization.
- 2- distinguish between the acids and the bases, understanding the factors that determine acid strength.
- 3- Name by the IUPAC system any saturated hydrocarbon whose parent chain contains 10 or fewer carbon atoms and no more than two simple rings (or sketch the hydrocarbon given its IUPAC. Describing (graphically and verbally) the relation between conformation and potential energy for ethane, propane and butane and closely related compounds (Newman projections) and drawing the chair conformer of cyclohexane.
- 4- Determine the configuration (R or S) of any chiral center .drawing, distinguishing between the isomers (cis- trans isomers and isomers that contain asymmetric centers) .
- 5- Name any alkene whose parent chain is 10 carbons or less by the IUPAC system , writing the mechanism for electrophilic addition reaction and describing the energy changes that take place during reaction
- 6- Predict the product(s) obtained from the addition reactions of alkenes and alkynes and predicting the stereoisomers obtained from the addition reactions of alkenes .
- 7- Introduction to some synthetic methods in organic chemistry, involving functional group interconversions
- 8- Explain the experimental basis for the concept of resonance or aromaticity, i.e. the differences in properties between aromatic and similar non-aromatic compounds and Explain the unusual stability of conjugated double bond systems
- 9- Define and use correctly the terms SN2 and SN1
- 10- Define and use correctly the terms E2 and E1.

## 22. Topic Outline and Schedule:

Week	Lecture	Topic	Teaching Methods*/platform	Evaluation Methods**	References
1	1.1	Chapter 1 Introduction Remembering General Chemistry: Electronic Structure and Bonding	Synchronous lecturing		Organic Chemistry, Paula Yurkanis Bruice ,seventh Edition
	1.2				
	1.3				
2	2.1	Chapter 2 Acids and Bases: Central to Understanding Organic Chemistry	Synchronous lecturing		
	2.2				
	2.3				
3	3.1	Chapter 3 An Introduction to Organic Compounds: Nomenclature, Physical Properties, and Representation of Structure	Synchronous lecturing		
	3.2				
	3.3				
4	4.1	Chapter 4 Isomers: The Arrangement of Atoms in Space	Synchronous lecturing		
	4.2				
	4.3				
5	5.1	Chapter 5 Alkenes: Structure, Nomenclature, and an Introduction to Reactivity • Thermodynamics and Kinetics	Synchronous lecturing		
	5.2				
	5.3				
6	6.1	Chapter 5 Alkenes: Structure,	Synchronous lecturing	Homework	

		Nomenclature, and an Introduction to Reactivity • Thermodynamics and Kinetics			
	6.2				
	6.3				
7	7.1	Chapter 6 The Reactions of Alkenes •The Stereochemistry of Addition Reactions	Synchronous lecturing	Homework	
	7.2				
	7.3				
8	8.1	Chapter 6 The Reactions of Alkenes •The Stereochemistry of Addition Reactions	Synchronous lecturing	Homework	
	8.2				
	8.3				
9	9.1	Chapter 7 The Reactions of Alkynes An Introduction to Multistep Synthesis	Synchronous lecturing and Asynchronous lecturing	Quiz	
	9.2				
	9.3				
10	10.1	Chapter 7 The Reactions of Alkynes An Introduction to Multistep Synthesis	Synchronous lecturing and Asynchronous lecturing		
	10.2				
	10.3				
11	11.1	Chapter 8 Delocalized Electrons and Their Effect on Stability, pKa, and the Products of a Reaction	Synchronous lecturing and Asynchronous lecturing	Quiz	
	11.2				
	11.3				
12	12.1	Chapter 8 Delocalized Electrons and Their Effect on	Synchronous lecturing and Asynchronous		

		Stability, pKa, and the Products of a Reaction	lecturing		
	12.2				
	12.3				
13	13.1	Chapter 9 Substitution Reactions of Alkyl Halides	Synchronous lecturing and Asynchronous lecturing	Quiz	
	13.2				
	13.3				
14	14.1	Chapter 9 Substitution Reactions of Alkyl Halides	Synchronous lecturing and Asynchronous lecturing		
	14.2				
	14.3				
15	15.1	Chapter 10 Elimination Reactions of Alkyl Halides • Competition Between Substitution and Elimination	Synchronous lecturing and Asynchronous lecturing	reports	
	15.2				
	15.3				

- Teaching methods include: Synchronous lecturing/meeting; Asynchronous lecturing/meeting
- Evaluation methods include: Homework, Quiz, Exam, pre-lab quiz...etc

### 23 Evaluation Methods:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	Period (Week)	Platform
Homework	5	Alkenes: Structure, Nomenclature, and an Introduction to Reactivity • Thermodynamics and Kinetics	6	Moodle
Homework	5	The Reactions of Alkenes • The Stereochemistry of Addition Reactions	7	Moodle
Quiz	10	The Reactions of Alkynes An Introduction to Multistep Synthesis	9	Zoom

Quiz	10	Delocalized Electrons and Their Effect on Stability, pKa, and the Products of a Reaction	11	Zoom
Quiz	10	Substitution Reactions of Alkyl Halides	13	zoom
Reports	10		15	Moodle

**24 Course Requirements (e.g: students should have a computer, internet connection, webcam, account on a specific software/platform...etc):**

students should have a computer and internet connection

**25 Course Policies:**

A- Attendance policies:  
 B- Absences from exams and submitting assignments on time:  
 C- Health and safety procedures:  
 D- Honesty policy regarding cheating, plagiarism, misbehavior:  
 E- Grading policy:  
 F- Available university services that support achievement in the course:

**26 References:**

A- Required book(s), assigned reading and audio-visuals:  
 Organic Chemistry, Paula Yurkanis Bruice ,seventh Edition

B- Recommended books, materials and media:

**27 Additional information:**

Name of Course Coordinator: -----Signature: ----- Date: -----

Head of Curriculum Committee/Department: ----- Signature: -----

Head of Department: ----- Signature: -----

Head of Curriculum Committee/Faculty: ----- Signature: -----

Dean: ----- Signature: -----