Faculty of Arts and Science
Course Syllabus
Semester: Second semester
Academic Year: 2020/ 2021

Course Title :	Organic chemistry 2
Course No. :	1722301
Prerequisite :	1722201
Concurrent :	…….
Department :	Chemistry
Coordinator :	Dr. Ahmed Abu-Rayyan
Mode of Instruction	**Blended Learning** - 2 hours in-class (Synonym) learning - 1 hour online asynchronous learning using Edu-Gate

*** Instructor:**

Name	Office Number	Office Phone	Office Hours	E-mail
Dr. Ahmed Abu-Rayyan	220	1410	Su. Tu. Thu 12-13 Mon. Wed. 9:30-11:00	a_aburayyan@asu.edu.jo

- **Course Description:**

The course is complementary to organic chemistry 1. This course includes additional topics in organic chemistry, such as: spectroscopic techniques in organic chemistry (mass spectrometry, ultraviolet visible, infrared, and NMR), basic chemistry of aromatic compounds, and organic compounds of different functional groups (alcohols, phenols, and ethers).Epoxides, aldehydes, ketones, and carboxylic acids), with great attention paid to nomenclature, stereochemistry, reaction mechanisms,

and synthetic organic chemistry.

- **Intended Learning Outcomes:**

Upon successful completion of this course, students will be able to:

A. Knowledge and Understanding:

A1. Recall major principles and concepts in organic chemistry.
A2. Name organic compounds either by common names or systematic (IUPAC) names.
A3. Mechanisms of some organic reactions
A4. Introduction to some synthetic methods in organic chemistry, involving functional group interconversions.

B. Cognitive and Intellectual Skills:

B1. Use previous knowledge to identify products of chemical reactions important in organic chemistry Apply such knowledge and understanding to the solution of problems
B2. Correlate structure to reactivity and stability in organic chemistry
B3. Evaluate and interpret chemical information and data.

C. Subject specific skills:

C1. Correlate reaction mechanism to reactants, reagents, and conditions used in a chemical reaction.
C2. Relating the structure to physical and chemical properties of organic compounds.

D. Transferable Skills:

D1. Communication skills, covering both written and oral communication.
D2. Apply creative and critical thinking skills in carrying out duties
D3. Research ability in the field of organic chemistry.

- **Course Contents and Schedule:**

Week	Day and Date	Topics to be covered	Method of instruction	CLOs	PLOs
1& 2	Mon. 7/3/2022 Wed. 16/3/2022	**Chapter 15: Benzene and Aromaticity:** 15.1 Naming of aromatic Compounds. 15.2 Structure and Stability of Benzene. 15.3 Aromaticity and the Huckel 4n+2 Rule 15.4 Aromatic Ions. 15.5 Aromatic Heterocycles. 15.6 Polycyclic aromatic Compounds	In-class lecture In-class lecture	A1, B3 C1, D1	1, 3 15, ,
3& 4	Mon. 21/3/2022 Wed. 30/3/2022	**Chapter 16: Electrophilic Aromatic Substitution:** 16.1Electrophilic Aromatic Substitution. Bromonation 16.2 Other Aromatic Substitution 16.3 Alkylation & Acylation of Aromatic Ring 16.4 Substituted Effect in Electrophilic Aromatic Substitution 16.5 Triubstituted Benzene 16.6 Nucleophilic Aromatic Substitution 16.7 Benzyne 16.8 Oxidation of Aromatic Compounds 16.9 Reduction of Aromatic Compounds	In-class lecture In-class lecture	A3, A4, C2, D1	10,11,15 ,
5 & 6	Mon. 4/4/2022 Wed. 13/4/2022	**Chapter 17: Alcohols and Phenols:** 17.1 Nomenclature of Alcohols and Phenols 17.2 Properties of Alcohols and Phenols. 17.3 Preparation of Alcohols 17.4-17.5 Alcohols from Carbonyl Compounds. 17.6 Reactions of Alcohols 17.7 Oxidation of Alcohols 17.8 Protection of Alcohols 17.9 Phenols and their Uses. 17.10 Reactions of Phenols	In-class lecture In-class lecture	A1, A4 B3	,4 ,8,9
7	Mon. 18/4/2022 Wed. 20/4/2022	**Chapter 18: Ethers and Epoxides:** 18.1Nome and Properties of Ethers 18.2 Synthesis of Ethers 18.3-18.4 Reactions of Ethers	In-class lecture Quiz1	A2, B3 C1, D1	3,6,7

		18.5 Cyclic Ethers 18.6 Reactions of Epoxides 18.7 Crown Ethers 18.8 Thiols and Sulfides	In-class lecture		
8 & 9	Mon. 2/5/2022 Wed. 11/5/2022	**Chapter 19: Aldehydes and Ketones:** 19.1Nome of Aldehydes and Ketones 19.2 Preparation of Aldehydes and Ketones. 19.3 Oxidation of Aldehydes and Ketones 19.4-1911 Nucleophilic Addition Reactions of Aldehydes and Ketones	In-class lecture Online sessions (asynchronous)	**A1, B2 C1, D3**	**5,2,8**
10	Mon. 16/5/2022 Wed. 18/5/2022	**Chapter 20: Carboxylic Acids & Nitriles:** 20.1 Nome of Carboxylic Acids 20.2 Structure and Properties of Carboxylic acids 20.4 Substituted Effect on Acidity 20.5 Preparation of Carboxylic Acids 20.6 Reactions of Carboxylic Acids. 20.7 Chemistry of Nitriles	In-class lecture Quiz 2 Online sessions (asynchronous)	**A3, A4, C3,**	**1,9,10**
11&12	Mon. 23/5/2022 Wed. 25/5/2022	**Chapter 21: Carboxylic Acids Derivatives:** 21.1 Nome of Carboxylic Acids Derivatives 21.2 Nucleophilic Acyl Substitution 21.3 Reactions of Carboxylic Acids 21.4 Chemistry of Acid halides 21.5 Chemistry of Acid Anhydride 21.6 Chemistry of Esters 21.7 Chemistry of Amides 21.8 Chemistry of Thioesters 21.9 Polyamides & Polyesters	In-class lecture Online sessions (asynchronous)	**A1, B2**	**4,6**
13	Mon. 30/5/2022 Wed. 1/6/2022	**Chapter 24: Amines:** 24.1 Noming of Amines 24.2 Structure and Properties of Amines 24.3-24.4 Basicty of Amines & Arylamins 24.6 Synthesis of Amines 24.7 Reactions of Amines 24.8 Reactions of Arylamins 24.9 Heterocyclic Amines	In-class lecture Assignment 2	**A1, B3 C1, D1**	**3,7**
14	Mon. 6/6/2022 Wed. 8/6/2022	12.1 Mass Spectrometry 12.2 Interpreting Mass Spectra 12.6 Infrared Specroscopy; 12.7 Interpriting Infrared Spectra	Online sessions (asynchronous) In-class lecture Online sessions (asynchronous)	**A3, A4, C1, C2, D1**	**8**
15	Mon. 13/6/2022 Wed.	13.1 Nuclear Magnetic Resonance Spectroscopy 13.3 Chemical shifts	Assignment 3 Online sessions (asynchronous)	A2, B3 C1,	11

	15/6/2022	13.4-13.7 ^{13}C NMR 13.8 -13.10 ^{1}H NMR.	Online sessions (asynchronous)	D2	
Sixteen		**Final Exam**			

Teaching Methods

1. Inter active lectures
2. Group discussions
3. Assignments
4. Reports
5. Quizzes

* Evaluation:

Grading Plan and Assessments		
Methods	**Weights**	**Due date**
Mid-term	30%	TBA
Written assignments & Quizzes	30%	TBA
Final Exam	40%	TBA

- **Textbook:**

- Organic Chemistry, by John E. McMurry. 8thEd, 2012.

- **References:**

  - Organic Chemistry, 7th Edition, L. G. Wade, Jr., Person Education Inc., 2010
  - Organic Chemistry I For Dummies, by Arthur Winter. July (2008).
  - Organic Chemistry I, by David R. klein. 2end edition June, (2007.)

Subject Coordinator	**Dr. Ahmed Abu-Rayyan**	**Signature:**	----------
Head of Curriculum Committee	**Dr. Hussam Miqdad**	**Signature:**	----------
Department Head	**Dr. Hussam Miqdad**	**Signature:**	----------
Faculty Dean	**Dr. Hadeel Ali Saed**	**Signature:**	----------

Copy to:

- Department Head.
- Head of Curriculum Committee.
- Course File.