



## Course Specifications

<b>Course Title:</b>	<i>Aromatic Organic Chemistry</i>
<b>Course Code:</b>	<i>CHEM 232</i>
<b>Program:</b>	<i>Bachelor in Chemistry</i>
<b>Department:</b>	<i>Chemistry</i>
<b>College:</b>	<i>Faculty of science</i>
<b>Institution:</b>	<i>Jazan University (JU)</i>

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## A. Course Identification

<b>1. Credit hours:</b>	<i>3hr</i>
<b>2. Course type</b>	
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>	
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>	
<b>3. Level/year at which this course is offered:</b>	<i>Level 4 / year 2</i>
<b>4. Pre-requisites for this course (if any):</b>	<i>Aliphatic Organic Chemistry CHEM 231</i>
<b>5. Co-requisites for this course (if any):</b>	<b>none</b>

### 6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom & LAB	57	90%
2	Blended		
3	E-learning	3	5%
4	Distance learning		
5	Other (LAB)		

### 7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	0
4	Others (specify)	0
<b>Total</b>		<b>60</b>

## B. Course Objectives and Learning Outcomes

## 1. Course Description

Course Title	Course Number	Contact Hours (CH)		Credit unit (CU)	Year	Level	Pre-requisite
		Lect.	Practical.				
Aromatic organic chemistry	CHEM 232	2	2	3	Second year	Third level	CHEM 231

**Course objectives:** They are to identify the following.

- 1- Identifying the properties of aromatic organic compounds
- 2- To provide students with the basic knowledge concerning nomenclature of aromatic organic compounds.
- 3 - To familiarize students with the methods of preparation of aromatic compounds and their different chemical reactions
- 4- To familiarize students with the importance of aromatic compounds and their applications

### Syllabus: A-Theoretical contents

Nomenclature, Physical properties, reactivity, classification, preparation, reactions and their application for aliphatic and aromatic of; Halo Compounds, Alcohols and Ethers, Phenols, Aldehydes and Ketones, Carboxylic Acids, Carboxylic Acid derivatives, Aromatic Nitro-Compounds, Amines, Aromatic Diazonium Salts and Their Related Compounds, Aromatic Sulphonic Acids.

### Syllabus: B-Practical contents

Selected experiments related to the course content;  
Investigation of organic solid compounds  
Identification methods of liquid organic compounds

\*See attachment

## 2. Course Main Objective

This course aims to provide students with the basic knowledge concerning aromatic organic compounds, their methods of preparation, properties and their most important chemical reactions

## 3. Course Learning Outcomes

CLOs		Aligned PLOs
1	<b>Knowledge and Understanding:</b> <i>Up on completion of this course, student will be able to</i>	
1.1	<i>Demonstrate a broad understanding and view of the principal theories, concepts and terminology of organic chemistry area. (I)</i>	K.1
1.2	<i>Describe Chemical phenomena using organic chemical principles of organic chemistry and understanding the reaction mechanisms for performing of the organic reactions. (I)</i>	K.2
2	<b>Skills:</b> <i>Up on completion of this course, student will be able to</i>	
2.1	<i>Demonstrate an ability in critical thinking for the nomenclature and draw the structure of all classes of organic compounds and differentiate between them. (I)</i>	S.1
2.2	<i>Apply their experimental basics and skills to use laboratory equipment, modern instrumentation, and classical techniques for carrying out experiments in various fields of chemistry and to write a report representing the scientific data. (I)</i>	S.2
2.3	<i>Examine his material and lab safety background to Follow proper procedures and regulations for safe handling and use of chemicals. (I)</i>	S.3
3	<b>Values:</b> <i>Up on completion of this course, student will be able to</i>	

CLOs		Aligned PLOs
3.1	<i>Work as a group leader in cooperation with other colleagues. (I)</i>	V.1

### C. Course Content

No	List of Topics	Contact Hours
1	<i>Revision on aromaticity, electrophilic aromatic substitution reactions and orientation in aromatic system.</i>	2
2	<i>Halo compounds (aliphatic and aromatic).</i>	4
3	<i>Alcohols, Ether (aliphatic and aromatic).</i>	4
4	<i>Phenols.</i>	2
5	<i>Aldehydes and Ketones (aliphatic and aromatic).</i>	4
6	<i>Carboxylic Acids (aliphatic and aromatic).</i>	4
7	<i>Carboxylic Acid derivatives (aliphatic and aromatic).</i>	4
8	<i>Aromatic Nitro-Compounds</i>	2
9	<i>Amino Compounds, Diazonium Salts and Their Related Compounds</i>	2
10	<i>Aromatic Sulphonic Acids</i>	2
<b>Total</b>		<b>30</b>

### D. Teaching and Assessment

#### 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	CLOs	Teaching Strategies	Assessment Methods
1.0	<b>Knowledge and Understanding</b> <i>Up on completion of this course, student will be able to</i>		
1.1	<i>Demonstrate a broad understanding and view of the principal theories, concepts and terminology of organic chemistry area. (I)</i>	lecture	Imbedded Q Final exam
1.2	<i>Describe Chemical phenomena using organic chemical principles of organic chemistry and understanding the reaction mechanisms for performing of the organic reactions. (I)</i>	lecture	Imbedded Q Final exam
2.0	<b>Skills</b> <i>Up on completion of this course, student will be able to</i>		
2.1	<i>Demonstrate an ability in critical thinking for the nomenclature and draw the structure of all classes of organic compounds and differentiate between them. (I)</i>	Lecture	Imbedded Q Final exam
2.2	<i>Apply their experimental basics and skills to use laboratory equipment, modern instrumentation, and classical techniques for carrying out experiments in various fields of chemistry and to write a report representing the scientific data. (I)</i>	Lab. work	Lab report
2.3	<i>Examine his material and lab safety background to Follow proper procedures and regulations for safe handling and use of chemicals.</i>	Lab. work	Quiz in safety
3.0	<b>Values</b> <i>Up on completion of this course, student will be able to</i>		
3.1	<i>Work as a group leader in cooperation with other colleagues. (I)</i>	Group work	Group work rubric

## 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Homework 1	5	2.5 (2.5%)
2	Group work rubric	8	0 (0%)
3	Quiz in Safety	9	0 (0%)
4	Mid-term exam	10	15 (15%)
5	Homework 2	12	2.5 (2.5%)
6	Practical	14	10
	Sheet		20
	Final practical exam		
7	Final Exam	16	50 (50%)
<b>Total</b>			<b>100%</b>

\*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

## E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

There are 4 office hours per week dedicated to serving students in terms of student guidance and solving issues related to the course.

## F. Learning Resources and Facilities

### 1. Learning Resources

Required Textbooks	Organic Chemistry, 12th Edition T. W. Graham Solomons, Craig B. Fryhle, Scott A. Snyder ISBN: 978-1-119-24370-0 November 2016 Edition 2015.
Essential References Materials	Organic Chemistry, 12th Edition T. W. Graham Solomons, Craig B. Fryhle, Scott A. Snyder ISBN: 978-1-119-24370-0 November 2016 Edition 2015.
Electronic Materials	1- <a href="https://chem.libretexts.org/Bookshelves/Organic_Chemistry/Map%3A_Organic_Chemistry_(McMurry)">https://chem.libretexts.org/Bookshelves/Organic_Chemistry/Map%3A_Organic_Chemistry_(McMurry)</a> . 2- <a href="https://chem.libretexts.org/Bookshelves/Organic_Chemistry/Book%3A_Organic_Chemistry_with_a_Biological_Emphasis_v2.0_(Soderberg)">https://chem.libretexts.org/Bookshelves/Organic_Chemistry/Book%3A_Organic_Chemistry_with_a_Biological_Emphasis_v2.0_(Soderberg)</a> . 3- <a href="https://chem.libretexts.org/Courses/Nassau_Community_College/Organic_Chemistry_I_and_II">https://chem.libretexts.org/Courses/Nassau_Community_College/Organic_Chemistry_I_and_II</a> .
Other Learning Materials	Non

### 2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	1 Lecture room for groups of 50 students. 1 Laboratory for group of 25 students

Item	Resources
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	<i>Data show, smart Board, ChemDraw, power point and ActivInspire.</i>
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	<i>Glassware, chemicals, hotplates, water bathes and flam.</i>

## G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
<i>Effectiveness of Teaching and Assessment</i>	<i>Students</i>	<i>Likert-type Survey (CES) <u>Indirect</u></i>
<i>Extent of achievement of course learning outcomes</i>	<i>Instructor &amp; Course coordinator</i>	<i><u>Class room evaluation</u> (direct &amp; indirect)</i>
<i>Quality of learning resources</i>	<i>Program coordinator</i>	<i><u>Indirect</u></i>
<i>Exam Quality assessment</i>	<i>Assessment committee</i>	<i><u>Indirect</u></i>

**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

## H. Specification Approval Data

<b>Council / Committee</b>	<b>Chemistry Department Council</b>
<b>Reference No.</b>	42 / 35 /102 112
<b>Date</b>	17 /09 /1442 Corresponding to 28 / 04 /2021

ADD Attachment:  
The lab. Experiments.

<b>Topics to be Covered</b>		
<b>List of Topics</b>	<b>No. of Weeks</b>	<b>Week</b>
<b>1. General Safety Rules</b>	<b>1</b>	<b>1<sup>st</sup> week</b>
<b>2. Lab. Equipment</b>	<b>1</b>	<b>2<sup>nd</sup> week</b>
<b>3. Qualitative analysis of solid organic compounds</b>	<b>1</b>	<b>3<sup>rd</sup> week</b>
<b>4. Ignition Test, Heating with soda-lime test, Treatment with 20% NaOH Test and Treatment with Conic H<sub>2</sub>SO<sub>4</sub> Test.</b>	<b>2</b>	<b>4, 5<sup>th</sup> weeks</b>
<b>5. Nitration Test, Acidity test, Solubility and reverse precipitation Test, FeCl<sub>3</sub> Test</b>	<b>1</b>	<b>6<sup>th</sup> week</b>
<b>6. Combination of compounds containing (C, H, O). Identification of Carbohydrates, Carboxylic acids, Phenols, Aldehydes-Ketones, Metallic salts and Hydrocarbon.</b>	<b>2</b>	<b>7, 8<sup>th</sup> weeks</b>
<b>7. Combination of compounds containing (C, H, O, N). Identification of Ammonium salts of acids, Amide, Imides and Amines.</b>	<b>1</b>	<b>9<sup>th</sup> week</b>
<b>8. Combination of compounds containing (C, H, O, N, S).</b>	<b>1</b>	<b>10<sup>th</sup> week</b>
<b>9. Combination of compounds containing (C, H, O, N and halogens).</b>	<b>1</b>	<b>11<sup>th</sup> week</b>
<b>10. Revision</b>	<b>3</b>	<b>12,13, 15<sup>th</sup> weeks</b>
<b>11. Final practical exam.</b>	<b>1</b>	<b>15<sup>th</sup> week</b>