هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد NCAAA T4 2020

Course Specifications

Course Title:	**Organic Chemistry**
Course Code:	**203 CHEM-3**
Program:	**Bachelor in Biology**
Department:	**Biology**
College:	**Faculty of Science**
Institution:	**Jazan University (JU)**

Table of Contents

A. Course Identification

1. Credit hours:	**3hrs**
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	Level 4 / Year 2
4. Pre-requisites for this course (if any)**:**	**CHEM 101**
5. Co-requisites for this course (if any)**:**	**N\A**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	22	100
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
6	**Total**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	22
2	**Laboratory/Studio**	22
3	**Tutorial**	
4	**Others** (specify)	
	Total	44

B. Course Objectives and Learning Outcomes

1. Course Description

Course Title	*Course Number*	*Contact Hours (CH)*		*Credit unit (CU)*	*Year*	*Level*	*Pre-requisite*
		Lec.	*Prac.*				
Organic Chemistry	*203 CHEM3*	*2*	*2*	*3*	*2*	*4*	*101CHEM4*

N

Course objectives: By the end of this course, students will be able to:

1- Identifying different ways for nomenclature of organic compounds.
2- To identify the functional groups in organic compounds.
3- To identify the saturated aliphatic hydrocarbons, methods of preparation and the most important chemical reactions.
4- To define carbohydrates, amino acids and fatty acids

Syllabus: A-Theoretical contents

Introductory Concepts, structure and hybridization in organic compounds, Types of Organic reactions, functional groups and types of isomerism, Hydrocarbons (Alkanes, their cyclic forms) Nomenclature, preparation, natural source and chemical reactions, Alkenes and alkynes (Nomenclature, isomerism, preparation and reactions), Aromatic compounds benzene and its derivatives Nomenclature of aromatic compounds, Preparation and Electrophilic substitution for benzene, Alcohols, ethers and phenols Nomenclature, preparation and chemical reactions, Aldehydes and ketones Nomenclature, preparation and chemical reactions, Carboxylic acids and its derivatives Nomenclature, preparation and chemical reactions, Amines Nomenclature, preparation and chemical reactions, Definition of Carbohydrates, amino and fatty acids.

Syllabus: B-Practical contents

Selected experiments related to organic chemistry topics.

*See attachment

2. Course Main Objective

This course aims to give students the basic knowledge concerning organic compound and related carbohydrates, amino acids, fatty acids.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding** Upon completion of this course student will be able to;	
1.1	Demonstrate abroad knowledge and understanding in fundamentals of organic chemistry topics as, aliphatic and aromatic hydrocarbons and their reactions. (I)	
1.2	Describe correctly the atomic structure, bonding in organic chemistry, reactions of some organic compounds. (I)	
2	**Skills:** Upon completion of this course student will be able to;	
2.1	Demonstrate the knowledge and skills to predict the effect of function groups in the reaction results, types of bonds and hybridization. (I)	

CLOs		Aligned PLOs
2.2	Demonstrate the skills of designing and carrying out scientific experiments as well as accurately record and analyze the results of such experiments. (I)	
2.3	know and follow proper procedures and regulations for safe handling, use, and disposal of chemicals (I)	

C. Course Content

No	List of Topics	Contact Hours
1	Introductory Concepts, structure and hybridization in organic compounds	1
2	Types of Organic reactions, functional groups and types of isomerism	1
3	Hydrocarbons (Alkanes, their cyclic forms) Nomenclature, preparation, natural source and chemical reactions.	3
4	Alkenes and alkynes (Nomenclature, isomerism, preparation and reactions)	3
5	Aromatic compounds benzene and its derivatives Nomenclature of aromatic compounds, Preparation and Electrophilic substitution for benzene	2
6	Alcohols, ethers and phenols Nomenclature, preparation and chemical reactions.	3
7	Aldehydes and ketones Nomenclature, preparation and chemical reactions.	3
8	Carboxylic acids and its derivatives Nomenclature, preparation and chemical reactions	3
9	Amines Nomenclature, preparation and chemical reactions.	2
10	Definition of Carbohydrates, amino and fatty acids.	1
11	Some experiments related to the course topics	22
Total		44

D. Teaching and Assessment

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

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding** Upon completion of this course student will be able to;		
1.1	Demonstrate abroad knowledge and understanding in fundamentals of organic chemistry topics as, aliphatic and aromatic hydrocarbons and their reactions.	Lecture	H.W., Quiz, Med-term and Final Exam.
1.2	Describe correctly the atomic structure, bonding in organic chemistry, reactions of some organic compounds.	Lecture	H.W., Quiz, Med-term and Final Exam.
2.0	**Skills** Upon completion of this course student will be able to;		
2.1	Demonstrate the knowledge and skills to predict the effect of function groups in the reaction results, types of bonds and hybridization.	Lecture	Practical Sheet and Final Exam.

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.2	Demonstrate the skills of designing and carrying out scientific experiments as well as accurately record and analyze the results of such experiments.	Laboratory	H.W., Quiz, Med-term and Final Exam.
2.3	know and follow proper procedures and regulations for safe handling, use, and disposal of chemicals	Group work Lab work	MCQ in safety Oral exam

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Homework assignment**	End of Each Chapter	5
3	**Mid-term exam**	5th	15
4	**Safety Quiz**	6th	3
5	**Practical Sheet**	11th	7
6	**Final practical exam**	11th	20
7	**Final Exam**	12th	50
Total			**100**

***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:

1- The office hours are listed in the instructor time-table and delivered to students in the first lecturer in each semester.
2- E-mail and telephone number are delivered to students for any help during semester.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Organic Chemistry (tenth edition) Written by T. W. Graham Solomons and Craig B. Fryhle http://chemistry.com.pk/books. • (أسس الكيمياء العضوية) الدكتور محمد بن ابراهيم الحسن والدكتور حسن بن محمد الحازمى 2019 الناشر دار الخريجى للنشر و التوزيع
Essential References Materials	• Organic Chemistry, Robert T. Morrison, Robert N. Boyd Translation copyright 2000 by Arab center for arabization, translation, authorship & publication (ACATAP, branch of ALECSO).
Electronic Materials	▪ https://www.pdfdrive.net/organic-chemistry ▪ https://clemermastio.files.wordpress.com/…/organic-chemistry solom.

	▪ https://en.wikipedia.org/wiki/Organic_chemistry ▪ https://www.masterorganicchemistry.com/organic-1/
Other Learning Materials	▪ https://www.youtube.com/watch?v=n5vjCqnVb6s ▪ https://www.chemguide.co.uk/orgmenu.html ▪ https://www2.chemistry.msu.edu/faculty/reusch/virttxtjml/intro1.html

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	▪ 1Lecture room for groups of 30 students. 1 Laboratory for group of 15 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data show, smart Board, Chem Draw, power point and Active Inspire.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Glassware, chemicals, hotplates, water bathes and flam.

G. Course Quality Evaluation

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

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

Council / Committee	Chemistry Department Council
Reference No.	
Date	

Laboratory Experiments

While specific laboratory experiments vary depending on the instructor and the semester, the following list is representative of the experiments that are used:

Course Name: - **Organic chemistry**

#	EXPERMENTS	Equipment, Chemicals and Tools.	No. of weeks for each experiment
1	General Safety Rules, Introduction of Basic Laboratory Techniques	Theoretical	1 week
2	Identification of Carboxylic Acid	**Chemicals:** Oxalic acid, tartaric acid , citric acid benzoic acid , salicylic acid , Phthalic Acid $FeCl_3$, $CaCl_2$, $_2SO_4$,$KMnO_4$, Na HCO_3 ,Recersinol, NaOH(10%). **Tool**: test tubes, Beaker **Equp**. :water bath	2 weeks
3	Salts of carboxylic acid,	**Chemicals:** Amm.oxalate , Amm.tartarate , sod benzoate od. Salicylate , $FeCl_3$, $CaCl_2$, NaOH , Na HCO_3 ,$AgNO_3$, **Tool:** test tubes, Beaker . **Equp.** :water bath	2 weeks
4	Aniline salt & Urea	**Chemicals:** Aniline HCl ,Aniline H_2SO_4,Urea , Na_2NO_2,β-naphthaol, $NaHCO_3$, $AgNO_3$,BaCl2 ,NaOH ,$CuSO_4$ **Tool**: test tubes, Beaker , ice bath. **Equp**. :water bath	1 week
5	Identification of carbohydrates	**Chemicals:** Glucose,galactose, ftuctose ,sucrose , maltose , maltose , lactose, starch , α – naphthaol , H_2SO_4 (conc) , barfoid reagent , iodine , , Fehling's solution , endict reagent **Tool**: test tubes, Beaker . **Equp**. :water bath	2 weeks
6	Scheme and revision	All the chemicals and tool and equp. Written above	2 weeks
7	Final Exam		1 week

Course Name	Organic Chemistry
Course Code	CHEM-203

PLOs	K1	K2	S1	S2	S3	S4	V1	V2
CLOs	1.1	1.2	2.1	2.2	2.3			
Marks	30	25	15	27	3			

Learning Domain	PLOs	CLOs	Assessment Type	Assessment Tool	No of Questions	Marks of the Assessment	Weight of the Assessment
Knowledge & understanding	**K1**	**1.1 (30 M)**	Homework	MCQ	2	**2**	**2%**
			Midterm	MCQ	2	**7**	**7%**
			Final Exam	MCQ	2	**21**	**21%**
	K2	**1.2 (25 M)**	Homework	MCQ	2	**2**	**2%**
			Midterm	MCQ	2	**5**	**5%**
			Final Exam	MCQ	2	**18**	**18%**
Skills	**S1**	**2.1 (15 M)**	Homework	Solving Problems	2	**1**	**1%**
			Midterm	Solving Problems	2	**3**	**3%**
			Final Exam	Solving Problems	3	**11**	**11%**
	S2	**2.2 (27 M)**	Practical Sheet	MCQ and Q& A	7	**7**	**7%**
			Final Practical Exam	Report of Lab Exam	---	**20**	**20%**
	S3	**2.3 (3 M)**	***Safety EXAM***	MCQ	6	**3**	**3**
TOTAL		**100**				**100**	**100%**