Course Specification
(Bachelor)

Course Title: : Organic Chemistry 1
Course Code: CEM130
Program: Chemistry
Department: Chemistry
College: : Science
Institution: Majmaah university
Version: : TP-153
Last Revision Date :14/12/2024

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (4hrs)					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☐Required		☐Elective		
3. Level/year at which this course is offered: (Level 2)					
4. Course General Description:					
The course provides a systematic study of the theories, principles, and techniques of organic chemistry. The course elaborates General introduction include the following: atomic orbitals and bonding, - Hybridization (sp3, sp2, sp), polarity in organic compounds - Initial, molecular and structural formulas, Representations of Structural Formulas. Lewis acids and bases, Isomers in organic compounds, Reactions and Their Mechanisms. The course elaborates Alkanes (open and Cyclic): Nomenclature, Physical properties, Sigma Bonds and Bond Rotation ,conformation isomers, synthesis and reactions. Alkenes and alkynes: Nomenclature, Physical properties, preparation methods and reactions. Introduction how Radicals form and how they React Conjugated Dienes : (Allyl radical and stability, electron delocalization, Resonance and the Stability of conjugated dienes, 1,4-Addition reactions of diene). Aromatic compounds and Benzene : Nomenclature, Physical properties, preparation methods and reactions.					
5. Pre-requirements for this course (if any)**:**					
There is none					
6. Co-requisites for this course (if any)**:**					
There is none					
7. Course Main Objective(s):					
The course aims to -Recognize and name organic compounds including alkanes alkenes, alkynes and aromatic compounds					

-Demonstrate basic understanding of structure of organic molecules

-Explain fundamental concepts of the reactivity and synthesis of organic molecules

-Appreciate how organic chemistry plays an important role in everyday life

- Research and present information on selected topics from the course using various modern technology

-Perform laboratory explorations to reinforce understanding of organic compounds properties chemical reactions

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100%
2	E-learning	-	-
3	Hybrid • Traditional classroom • E-learning	-	-
4	Distance learning	-	-

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	30
3.	**Field**	-
4.	**Tutorial**	-
5.	**Others (specify)**	-
Total		75

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Define the concepts and principles of organic chemistry a evaluate and interpret the organic chemistry principals	**K1**	-Lectures. - Conduct scientific research. -Effective Learning - Seminars. -Discussions -Brainstorming Engagement and Motivation	-Final exam - Midterm exam - Short tests -Quizzes. - Homework - Class exercises - Evaluation of research
1.2	Explain the organic Chemical Reactions and synthesis of the of organic compounds	**K3**		
2.0	**Skills**			
2.1	Perform the Laboratory experiments using the right scientific methods and proper safety procedures	**S1**	-Laboratories -Effective Learning Collaborative - Learning. -Engagement and Motivation	-Practical tests -Practical reports -Performance appraisal -rubric assessment Note card Reports and Research papers
2.2	Demonstrate the ability to use modern technology and statistical applications that are	**S3**	Lectures. - Conduct scientific research.	Performance appraisal -rubric assessment Note card

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	used in the various fields of chemistry		-Effective Learning - Seminars. -Discussions - E-learning -Self-learning -Brainstorming Engagement and Motivation	Reports and Research papers Presentasion
3.0	**Values, autonomy, and responsibility**			
3.1	Demonstrate the ability of working independently and with groups..	**V2**	-Laboratories -Effective Learning -Collaborative Learning. -Engagement and Motivation -Conduct scientific research -Tem working	-Practical test -Performance appraisal -Reports and -Research papers

C. Course Content

No	List of Topics	Contact Hours
1.	General introduction include the following: atomic orbitals and bonding, - Hybridization (sp3, sp2, sp) ,polarity in organic compound - Initial, molecular and structural formulas, Representations of Structural Formulas. Lewis acids and bases, Isomers in organic compounds, Reactions and Their Mechanisms	9
2.	Alkanes (open and Cyclic): Nomenclature, Physical properties, Sigma Bonds and Bond Rotation ,conformation isomers, synthesis and reactions	9
3.	Alkenes :Nomenclature, Physical properties, isomer in Alkenes synthesis and reactions.	6
4.	alkynes: Nomenclature, Physical properties, synthesis and reactions	6
5.	Conjugated Dienes : (Allyl radical and stability, Resonance and the Stability of conjugated dienes, 1,4-Addition).	6

6.	Introduction how Radicals form and how they React	3
7.	Aromatic compounds and Benzene: Nomenclature, Physical properties, synthesis and reactions	6
Total		45
	Practical part Work safely and competently in an organic chemistry lab setting chemical information, safe handling, use and disposal of organic compounds	2
	Apparatus used in organic laboratory	2
	Melting and boiling points measurement	4
	Distillation.	4
	Recrystallization	4
	Synthesis of aspirin and acetanilide.	4
	Extraction caffeine from tea	2
	Differentiates between aliphatic and aromatic compounds and between saturated and unsaturated compounds - detection of N, S, Cl, Br, I	4
Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	homework, exercises, periodic tests , Essays, laboratory reports	During the semester	10%
2.	Midterm 1	6th week	10%
3.	Midterm 2	11th week	10%
4.	Electronic exam	12th week	10%
5.	Lab exam	End of semester	20%
6.	Final exam	End of semester	40 %
Total		100%	

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	**T. W. Graham Solomons , Craig B. Fryhle , Scott A. Snyder . Organic Chemistry 12th Edition 2017. 2- Robert Thornton Morrison. Organic Chemistry 7th edition /2011. Pearson**
Supportive References	**Finar, I L. Organic Chemistry: Volume 1. Sixth Edition)2010. Pearson.**
Electronic Materials	http://www.organicworldwide.net/ http://www.organic-chemistry.org/ http://www.colby.edu/chemistry/cmp/cmp.html http://webbook.nist.gov./chemistry/ https://www.sciencedirect.com/
Other Learning Materials	https://chemaxon.com/marvin

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Class room, laboratory of Organic chemistry
Technology equipment (projector, smart board, software)	The electronic platform, data show, Smart Board
Other equipment (depending on the nature of the specialty)	Virtual laboratories Library

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Student evaluation (electronically questionnaire) organized by the University
Effectiveness of Students assessment	Department	Analysis of electronically questionnaire. the Make decision through department Council
Quality of learning resources	Department / staff members	Analysis of course report
The extent to which CLOs have been achieved	Department Faculty	CLO Analysis Report
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Chemistry Department Council	
REFERENCE NO.	17	
DATE	15/6/1446	16/12/2024