Course Specification
(Bachelor)

Course Title:	Mechanism of Organic Reactions
Course Code:	CEM334
Program:	Chemistry
Department:	Chemistry
College:	Science
Institution:	Majmaah University
Version:	2024
Last Revision Date:	9 December 2024

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A. General information about the course:

1. Course Identification

1. Credit hours: (2)					
2					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (level 6/ 3rd year.)					
4. Course General Description:					
This course deals with the mechanisms which all the organic reaction follows which help students to understand and interpreted the resultant products, also illustrate the intermediate steps, the order of reaction and the stereochemistry of the final products. This course help students to develop higher thinking skills					
5. Pre-requirements for this course (if any)**:**					
Organic chemistry 2 (CEM231)					
6. Co-requisites for this course (if any)**:**					
NONE					
7. Course Main Objective(s):					
The primary objective of mechanism of organic reactions is to 1. Recognize the basic knowledge of organic reaction mechanism of substitution and elimination, electrophilic and nucleophilic addition for C-C double bond and carbonyl compounds, electrophilic and nucleophilic reaction of benzene. 2. Apply the reaction mechanisms producing the basic principles which determines chemical reactivity in organic chemistry . 3. Draw products and reaction mechanisms for many reactions including ,aliphatic, aromatic compounds, carbonyl-containing compounds					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	34	100

No	Mode of Instruction	Contact Hours	Percentage
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**	34
2.	**Laboratory/Studio**	-
3.	**Field**	-
4.	**Tutorial**	-
5.	**Others (specify) home work ,study**	
Total		34

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 basic concepts for different organic reaction mechanism.SN1,SN2, E1, E2, electrophilic and nucleophilic substitution reaction for aliphatic and aromatic compounds	**K1**	Lectures. - Discussions - Brainstorming	Written and electronic Exams, home work
1.3	Explain Chemical Reactions and Stoichiometry concepts to problems involving mass,	**K3**	-Lectures. - Discussions - Brainstorming	Written and electronic Exams

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	moles, and solution molarity			
2.0	**Skills**			
2.1	Communicate effectively orally and written using appropriate chemical equation and arrows to illustrate the different reaction mechanism	S2	Lectures. - Discussions - Brainstorming	Written and electronic Exams, home work
2.4	Solve chemical problems related to organic mechanism through critical thinking to develop appropriate rational, explanations and answers	S4	Lectures. - Discussions - Brainstorming	Written and electronic Exams, home work
3.0	**Values, autonomy, and responsibility**			
3.3	Self-development, assess own learning and performance and autonomously make decisions regarding self-development and/or tasks based on convincing evidence.	V3	Class activity	assignments

C. Course Content

No	List of Topics	Contact Hours
1	Structure of organic molecules and reactivity	4
2.	Nucleophilic substitution reactions on saturated carbon atom.	6
3.	Nucleophilic and electrophonic substitution reactions on aromatic compounds.	6
4.	Elimination reactions and the factors that affect them	4

5.	Addition reactions on the double bond (carbon-carbon).	6
6.	Addition reactions on carbonyl group	6
7.	Rearrangement of carbocation	2
Total		34

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Mid-term exam**1**	7th	15%
2.	Mid-term exam2 (written)	12th	15%
3.	Electronic exam (distance)	9-10th	10%
4.	Problem solving (group work), oral presentation, home work	3- 12th	20%
7	Final exam (written)	17-19th	40%

*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	A Guide Book to the Mechanism of Organic Reaction. 6th edition. Peter Skyes. Longman Scientific Technical
Supportive References	Advanced organic chemistry, Part A: Structure and Mechanism, 5th edition, Francis A. Carey Richard J. Sundberg. Springer
Electronic Materials	http://www.organic-chemistry.org/ http://www.acdlabs.com/iupac/nomenclature/ http://www.chem1.com/acad/webtext/gas/gas_3.htm. http://www.chemistry.ohio-state.edu. Elsevier (www.sciencedirect.com) Springerlink (**www.springerlink.com**)
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities	Class rooms

Items	Resources
(Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	
Technology equipment (projector, smart board, software)	data show, Smart Board,
Other equipment (depending on the nature of the specialty)	chemdraw, chemsketch

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	students	indirect
Effectiveness of Students assessment	staff	Direct **(internal report)**
Quality of learning resources	students	indirect
The extent to which CLOs have been achieved	staff	Direct(PLO assessment)
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**CHEMISTRY COMMITTE**
REFERENCE NO.	**17**
DATE	**15/12/2024**