



Course Specification

— (Bachelor)

Course Title: × Organic chemistry

Course Code: CHEM 211

Program: General Biology

Department: Biology

College: Sciences

Institution: Majmaah university

Version: 4

Last Revision Date: December 2023



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A. General information about the course:

1. Course Identification

1. Credit hours: 3(2+1)

Equivalent to ECTS Credit Point: 4.5

2. Course type

- A. University College Department Track Others
- B. Required Elective

3. Level/year at which this course is offered: (Third- Second year)

4. Course general Description:

The course deals with the chemical composition, properties and physical properties of organic molecules. These include hydrocarbons, alcohol, aldehyde, ketone, carboxylic acid and nitrogenated compound. The practical part involves the use of qualitative methods for the, identification of these molecules.

5. Pre-requirements for this course (if any):

General chemistry CHM 101

6. Pre-requirements for this course (if any):

NA

7. Course Main Objective(s):

By the end of this course the student will be able to:

1. Show the essential knowledge and understanding of the fundamental Principles of organic chemistry, which will help them to intake biology courses.
2. classify organic compounds according to their functional groups and understand their structure, Nomenclature, synthesis, physical and chemical properties.
3. Explain the importance of organic compounds and their uses in biology.
4. Read and appreciate the current literature in the area of organic Chemistry.
5. Develop basic laboratory skills and techniques

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	88%
2	E-learning	8	12%
3	Hybrid <ul style="list-style-type: none"> • Traditional classroom • E-learning 		
4	Distance learning		



3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	30
3.	Field	0
4.	Tutorial	
5.	Others (specify) office hours	
Total		60

Workload (based on academic semester)

No	Activity	Work load (In hours)
1.	Contact hrs	60
2.	Self –study hours or Academic learning hours (Assignments, quizzes, reports, discussions, library , research....)	60
Total Workload		120
Equivalent to ECTS Credit Pionts		4.5

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
K.1.1	Memorize the principle concepts in the organic chemistry which will help them to intake biology courses.	K1	Lecture, discussion, presentation group and	Quiz , midterm exam, final exam
K.3.1	Name the organic compounds and functional group as introduction of biological sciences	K3	Lecture, discussion, presentation group and	Quiz , midterm exam, final exam
K.4.1	Memorize the principle concepts in the organic chemistry	K4	Lecture, dissection Debriefing group and	Quiz , midterm exam, final exam





Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	which will help them to intake biology courses			
2.0	Skills			
S.1.1	Identify different groups of organic compounds and write a report of identifications	S1	Lecture, discussion, presentation, practical class group and	Final practical exam , lab report, lab assignment,
3.0	Values, autonomy, and responsibility			
V.1.1	Work effectively in team	Lecture, group dissection and Debriefing	Lecture, discussion, presentation, practical class group and	Homework, lab report, lab assignment

C. Course Content

No	List of Topics	Contact Hours
1.	<p>Introduction Organic chemistry</p> <ul style="list-style-type: none"> • Introduction & history of organic compounds. • Sources & importance of organic compounds. • Classification of organic compounds. • Properties of organic compounds. • Comparison of organic & inorganic compounds. • Bonding in organic compounds • Different way for drawing organic structures • Functional Groups. <p>Structural isomerism</p>	2
2.	<p>Structure and reactivity</p> <ul style="list-style-type: none"> • concepts for predicting physical properties Intermolecular forces. • Intramolecular forces <ol style="list-style-type: none"> 1. Ion-ion interactions (forces) 2. Covalent interactions. 3. Co-ordinate covalent interactions <p>Intermolecular Forces</p> <ol style="list-style-type: none"> a. van der Waals forces b. dipole-dipole interactions c. H-bonding <p>Competing intermolecular forces and solubility</p>	4
3	Saturated compound (Alkanes)	2





	<ul style="list-style-type: none"> Nomenclature Synthesis of alkane Physical and chemical properties of alkanes Different reaction of alkanes <ul style="list-style-type: none"> Mechanism of halogenation <p>Uses of alkanes</p>	
4	<p>Alkyl Halides</p> <ul style="list-style-type: none"> Nomenclature Categories of alkyl halides Synthesis Physical & chemical properties <ul style="list-style-type: none"> Nucleophilic substitution SN1 and SN2 <p>Elimination reaction E1 and E2</p>	4
5	<p>Unsaturated compounds (Alkenes and alkynes)</p> <ul style="list-style-type: none"> ALKENES <ul style="list-style-type: none"> Nomenclature, synthesis, Physical & chemical properties, reactions & uses ALKYNES <p>Nomenclature, synthesis, Physical & chemical properties, reactions & uses</p>	2
6	<p>Benzene and aromatic compounds</p> <p>Nomenclature, synthesis, Physical & chemical properties, reactions & uses</p>	2
7	<p>Oxygenated compound, Alcohols and phenols</p> <p>Nomenclature, synthesis, Physical & chemical properties, reactions & uses</p>	2
8	<p>Oxygenated Carbonyl compounds (Aldehyde, ketone, carboxylic acid, acid chloride)</p> <p>Nomenclature, synthesis, Physical & chemical properties, reactions & uses</p>	4
9	<p>Nitrogenized Compounds (Amine and Amide)</p> <p>Nomenclature, categories of amines, synthesis, Physical & chemical properties, reactions & uses</p>	2
10	<p>Polycyclic and heterocyclic aromatic compounds</p>	2
11	<p>Spectroscopy</p>	2
Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	1 st Midterm exam Theory Unit -1,2 and 3	Week 6	10%
2.	e- learning exam Unit -3and 4	Week 8	10%





No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
3.	2 nd Midterm exam Theory Unit -5 and 6	Week 12	10%
4	Assignment	During the semester	5%
5	Lab report	During the semester.	5%
6	Practical exam	Week 14	20%
7	Final Theory exam (Unit – 1 – ٩). The number of questions will be calculated according to the weight-age of topic/unit distribution	week 15-16	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	<ol style="list-style-type: none"> 1- John McMurry Organic Chemistry with Biological Applications 2 Edition, 2010. Publisher: Mary Finch 2- William H. Brown, Brent L. Iverson, Eric Anslyn and Christopher S. Foote, Organic Chemistry 7th Edition January 2013. 3- Organic Chemistry for B.Sc. II by M. Younas 															
Supportive References	<table border="1"> <thead> <tr> <th>ISBN</th> <th>Publishing Year</th> <th>Publisher</th> <th>Author's Name</th> <th>Textbook title</th> </tr> </thead> <tbody> <tr> <td>978-0-757-54473-6,</td> <td>2008</td> <td>Kendall Hunt Pub Co</td> <td>Kenneth F. Cerny, Marietta H. Schwartz</td> <td>Organic Chemistry</td> </tr> <tr> <td>13: 978-0-387-44897-8</td> <td>2007</td> <td>Springer</td> <td>Francis A. Carey and Richard J. Sundberg</td> <td>Advanced Organic Chemistry: Part A: Structure and mechanisms</td> </tr> </tbody> </table>	ISBN	Publishing Year	Publisher	Author's Name	Textbook title	978-0-757-54473-6,	2008	Kendall Hunt Pub Co	Kenneth F. Cerny, Marietta H. Schwartz	Organic Chemistry	13: 978-0-387-44897-8	2007	Springer	Francis A. Carey and Richard J. Sundberg	Advanced Organic Chemistry: Part A: Structure and mechanisms
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13: 978-0-387-44897-8	2007	Springer	Francis A. Carey and Richard J. Sundberg	Advanced Organic Chemistry: Part A: Structure and mechanisms												
Electronic Materials	<ol style="list-style-type: none"> 1- http://www.freebookcentre.net/Chemistry/organicChemistry-Books-Download.html 2- http://en.wikipedia.org/wiki/Website 3- http://www.organic-chemistry.org/books 4- http://www2.chemistry.msu.edu/faculty/reusch/VirtTxtJml/intro1.htm http://chemwiki.ucdavis.edu/Organic_Chemistry 															
Other Learning Materials	CDs from various books of Chemistry whatever are available in the library															





2. Required Facilities and equipment

Items	Resources
<p>facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)</p>	<ul style="list-style-type: none"> • Specific room allotment for delivering lecture can be made. • Assigning appropriate accommodation for conducting examination. • Laboratories to be managed and equipped with advanced instruments. <p>Optically and electronically facilitated lecture rooms</p>
<p>Technology equipment (projector, smart board, software)</p>	<ul style="list-style-type: none"> • Websites on the internet those are relevant to the topics of the course. • Latest audio- visual aids. • Projector in the classroom. <p>Smart board in the classroom.</p>
<p>Other equipment (depending on the nature of the specialty)</p>	Chemicals

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students, and department committee	Indirect by student evaluation form And Report of assessment committee in department
Effectiveness of Students assessment	Students, and department committee	Indirect by student evaluation form And Report of assessment committee in department
Quality of learning resources	Peer Reviewer	Indirect
The extent to which CLOs have been achieved	Instructor	Direct assessment sheet
Other		

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

Assessment Methods (Direct, Indirect) minute

G. Specification Approval

COUNCIL /COMMITTEE	Chemistry Department council
REFERENCE NO.	MINUTE 1
DATE	11/2/1445

