Al-Mansour University College

Department of Pharmacy

Organic Chemistry I Course Description

1. Course Name	
Organic Chemistry I Subject area: Pharmaceutical Chemistry	
2. Course Code	
PHA12104	
3. Semester and Year	
First Year / Second Semester Total credits: 4 | Theory credits: 3 | Practical credits: 1	
4. Date this description was prepared	
23/8/2026	
5. Available attendance forms	
On-campus theoretical lectures and practical laboratory classes.	
6. Total academic hours	
Weekly contact hours: 5 (3 theory + 2 practical). Semester allocation over 15 weeks: 45 theory + 30 practical = 75 contact hours. Credit hours: 4 (3 theory credits + 1 practical credit). The practical schedule covers 15 weeks (30 hours). Topics for weeks 11–15 require departmental confirmation.	
7. Name of course coordinator(s)	
Name and academic title: Asst. Lect. Zaineb Hussain Kadhum Email:	
8. Course objectives	
Theoretical objectives	1. Develop a foundational understanding of organic chemistry and relate the structures of carbon-based molecules to their physical and chemical properties. 2. Progress from bonding principles to major hydrocarbon families, three-dimensional structure, key functional groups, and the distinctive chemistry of aromatic compounds.
Practical objectives	1. Determine melting and boiling points of known and unknown compounds. 2. Evaluate purity and identity using melting and boiling point data. 3. Purify solids by recrystallization and assess purification efficiency. 4. Apply simple and fractional distillation to separate and purify liquid mixtures. 5. Determine solubility classes in different solvents and relate solubility data to pharmaceutical formulation and analysis.

9. Teaching and learning strategies	
Teaching strategies	Interactive lectures, structural diagrams, molecular models, and guided reaction discussions. Laboratory teaching includes demonstrations, supervised measurement and purification, and interpretation of experimental observations.
Learning strategies	Guided reading, structure drawing, molecular visualization, comparison of compound families, problem-solving, and laboratory records. Students relate observations to molecular structure and receive feedback on theoretical understanding and practical performance.

10. Theoretical course structure

The ten theoretical units comprise 45 contact hours. Delivery is scheduled at 3 hours per week over 15 weeks; a teaching week may include parts of two units.

Unit	Hrs	Required learning outcomes	Name of the unit or topic	Learning method	Evaluation method
1	3	Relate bonding, hybridization, polarity, and intermolecular forces to molecular structure and physical properties.	Introduction: structure and properties; atomic and molecular orbitals; hybrid orbitals; intermolecular forces; polarity; structure and physical properties.	Lecture; diagrams and models	Quiz; written and oral questions
2	4	Describe the structures, properties, and characteristic chemistry of alkanes and methane.	Alkanes and methane.	Lecture; diagrams and models	Quiz; written and oral questions
3	4	Explain the structures and characteristic reactions of alkenes and dienes.	Alkenes and dienes.	Lecture; diagrams and models	Quiz; written and oral questions
4	3	Relate the structure of alkynes to their properties and characteristic reactions.	Alkynes.	Lecture; diagrams and models	Quiz; written and oral questions
5	3	Describe cyclic structures and explain conformations and ring strain.	Cycloalkanes.	Lecture; diagrams and models	Quiz; written and oral questions

10. Theoretical course structure continued					
Unit	**Hrs**	**Required learning outcomes**	**Name of the unit or topic**	**Learning method**	**Evaluation method**
6	8	Represent molecules in three dimensions and distinguish stereochemical relationships.	Stereochemistry I and II.	Lecture; diagrams and models	Quiz; written and oral questions
7	3	Describe the properties and characteristic reactions of alkyl halides.	Alkyl halides.	Lecture; diagrams and models	Quiz; written and oral questions
8	6	Compare the structures, properties, and reactions of alcohols and ethers.	Alcohols and ethers.	Lecture; diagrams and models	Quiz; written and oral questions
9	4	Explain the structure, properties, and characteristic chemistry of phenols.	Phenols.	Lecture; diagrams and models	Quiz; written and oral questions
10	7	Explain aromatic structure and electrophilic aromatic substitution in benzene and related arenes.	Aromatic hydrocarbons: benzene, electrophilic aromatic substitution, arenes, and their derivatives.	Lecture; diagrams and models	Quiz; written and oral questions

Total theoretical contact hours: 45

10. Practical course structure

Two practical contact hours per week. Topics for weeks 11–15 are pending departmental confirmation.

Week	Hrs	Practical subject and expected learning outcome
1	2	Determination of melting point — known sample. Measure and record the melting range of a known compound.
2	2	Determination of melting point — quiz and unknown sample. Complete the quiz and interpret the melting range of an unknown sample.
3	2	Determination of boiling point — known sample. Determine and record the boiling point of a known liquid.
4	2	Determination of boiling point — quiz and unknown sample. Complete the quiz and interpret the boiling point of an unknown liquid.
5	2	Recrystallization — known sample. Purify a known solid by recrystallization and assess the result.
6	2	Recrystallization — quiz and unknown sample. Complete the quiz and apply recrystallization to an unknown solid.
7	2	Distillation techniques — known samples. Apply the assigned simple or fractional distillation method to known samples.
8	2	Distillation techniques — quiz and unknown sample. Complete the quiz and use the assigned distillation technique for an unknown sample.
9	2	Determination of solubility class — known sample. Observe solubility behavior and classify a known compound.
10	2	Determination of solubility class — quiz and unknown sample. Complete the quiz and determine the solubility class of an unknown compound.
11–15	10	Pending departmental confirmation: specify practical topics, learning outcomes, and assessment for weeks 11–15.
Total	30	20 scheduled hours + 10 hours with topics pending confirmation.

Practical learning methods: demonstration, supervised laboratory work, recording observations, and interpretation of results. Evaluation methods: quizzes, practical performance, laboratory reports, oral questions, and practical examinations.

11. Course evaluation

Assessment covers theoretical understanding and practical laboratory skills, with a total score of 100 marks. The proposed distribution below is subject to departmental approval.

Assessment component	Marks
Coursework, quizzes, and assignments	10
Mid-semester theoretical examination	20
Practical assessment and examinations	10
Final theoretical examination	60
Total	100

12. Learning and teaching resources

Theoretical references	1. John McMurry. Organic Chemistry. 10th edition, 2023. 2. Vollhardt and Schore. Organic Chemistry: Structure and Function. 8th edition. 3. Robert T. Morrison and Robert N. Boyd. Organic Chemistry.
Practical reference	Handbook for Practical Organic Chemistry adopted by the Department.
Recommended supporting materials	Molecular models, structural diagrams, worked exercises, and laboratory worksheets selected by the course coordinator.
Electronic references and websites	Department-designated electronic lecture materials, molecular visualization resources, and relevant laboratory equipment instructions.

13. Course Development Plan

Complete the practical topics and learning outcomes for weeks 11–15. Review the links between molecular structure, physical properties, and laboratory observations. Update diagrams and practical instructions, and use assessment results and student feedback to improve stereochemical visualization, reaction understanding, and interpretation of purification and identification data.