
	وزارة التعليم العالي والبحث العلمي جامعة المستقبل كلية العلوم قسم الكيمياء الحياتية	
---	--	---

## MODULE DESCRIPTION FORM

### نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	Organic chemistry(part 1)		Module Delivery
Module Type	Basic		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UOMU036232		
ECTS Credits	8		
SWL (hr/sem)	200		
Module Level	2	Semester of Delivery	
Administering Department	Dept. of Biochemistry	College	College of Science
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

<b>Relation with other Modules</b> العلاقة مع المواد الدراسية الأخرى			
<b>Prerequisite module</b>	None	<b>Semester</b>	
<b>Co-requisites module</b>	None	<b>Semester</b>	
<b>Module Aims, Learning Outcomes and Indicative Contents</b> أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
<b>Module Aims</b> أهداف المادة الدراسية	<ol style="list-style-type: none"> <li>1. Introduce students to the fundamental principles of organic chemistry, including the structure and composition of organic compounds.</li> <li>2. Enable students to understand and apply theories related to organic reactions and their mechanisms.</li> <li>3. Develop students' skills in using organic chemistry terminology to analyze complex chemical reactions.</li> <li>4. Enhance analytical and critical thinking abilities through solving chemistry-related problems in both daily life and industrial contexts.</li> <li>5. Provide practical opportunities for students to apply their theoretical knowledge through laboratory experiments focused on the synthesis and analysis of organic compounds.</li> <li>6. Prepare students to understand the role of organic chemistry in pharmaceutical, petrochemical, and other chemical industries.</li> </ol>		
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	<p>By the end of this module, students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the fundamentals of organic chemistry: Identify and describe the structure, bonding, and functional groups of organic molecules.</li> <li>2. Apply reaction mechanisms: predict the outcome of organic reactions based on their mechanisms and analyze reaction pathways.</li> <li>3. Analyze and interpret spectroscopic data: Use techniques like NMR, IR, and mass spectrometry to deduce the structure of organic compounds.</li> <li>4. Synthesize organic compounds: Design and execute simple synthetic routes for organic molecules, applying various reaction conditions.</li> <li>5. Solve complex problems in organic chemistry: Use critical thinking to solve chemical problems related to organic synthesis, reaction mechanisms, and molecular behavior.</li> <li>6. Understand the relevance of organic chemistry in industry: Explain the application of organic reactions in pharmaceutical and industrial processes, including green chemistry principles.</li> <li>7. Conduct laboratory experiments: Perform organic chemistry laboratory techniques such as distillation, extraction, and</li> </ol>		

	chromatography, and analyze the results effectively.
<b>Indicative Contents</b> المحتويات الإرشادية	<p>1- Introduction to Organic Chemistry; Basic concepts: Structure of organic molecules, hybridization, bonding, and molecular geometry. Functional groups: Overview of common functional groups (alkanes, alkenes, alkynes, alcohols, ethers, etc.).</p> <p>2- Alkanes, Alkenes, and Alkynes; Structure, properties, and reactions of alkanes, alkenes, and alkynes. Hydrogenation, halogenation, and polymerization.</p> <p>3- Alcohols and Ethers; Preparation and reactivity of alcohols and ethers. Oxidation and reduction of alcohols.</p> <p>4- Aldehydes and Ketones; Nomenclature, structure, and reactivity of aldehydes and ketones. Nucleophilic addition reactions and their mechanisms.</p> <p>5- Carboxylic Acids and Derivatives; Structure, acidity, and preparation of carboxylic acids. Reactions of carboxylic acid derivatives (amides, esters, anhydrides).</p>

<b>Learning and Teaching Strategies</b> استراتيجيات التعلم والتعليم	
<b>Strategies</b>	<p>Lectures will provide a structured overview of key concepts and theories in organic chemistry. Students will be introduced to fundamental topics through visual aids, diagrams, and real-world examples to enhance understanding.</p> <p>In-class discussions and Q&amp;A sessions will encourage student engagement, promoting critical thinking and collaborative learning. Students will be encouraged to ask questions and discuss complex concepts with their peers and the instructor.</p> <p>Hands-on laboratory sessions will enable students to apply theoretical principles in a practical environment. Experiments will focus on synthesizing, purifying, and characterizing organic compounds using standard laboratory techniques (e.g., distillation, chromatography, and spectroscopic analysis).</p> <p>Group work will encourage teamwork and communication skills. Students will collaborate on small research projects or problem-solving exercises, which they will present to the class, fostering peer learning.</p> <p>Continuous formative assessments such as quizzes, homework assignments, and laboratory reports will be used to monitor student progress. Detailed feedback will be provided to help students improve and clarify misunderstandings.</p>

<b>Student Workload (SWL)</b> الحمل الدراسي للطلاب			
<b>Structured SWL (h/sem)</b>	65	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطلاب أسبوعيا	4.3

الحمل الدراسي المنتظم للطلاب خلال الفصل			
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	135	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	9
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	200		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	5% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	1	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects/Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to organic chemistry
Week 2	Alkanes: structure of alkanes, nomenclature, classification of carbon atoms
Week 3	Alkanes: physical properties of alkanes, conformations
Week 4	Alkanes: preparation of alkanes, reactions of alkanes
Week 5	Alkenes: structure of alkenes, nomenclature, geometric isomerism
Week 6	Alkenes: physical properties of alkenes, preparation of alkenes, mechanisms
Week 7	Alkenes: reactions of alkenes
Week 8	Mid Exam.
Week 9	Alkynes: structure of alkynes, nomenclature, acidity
Week 10	Alkynes: physical properties of alkynes, preparation of alkynes, reactions
Week 11	Alcohols: structure of alcohols, nomenclature, classification
Week 12	Alcohols: physical properties, chemical properties, preparation, reactions
Week 13	Dienes: Structure and properties, nomenclature

<b>Week 14</b>	Dienes: preparation, reactions
<b>Week 15</b>	Comprehensive review

<b>Delivery Plan (Weekly Lab. Syllabus)</b> المنهاج الاسبوعي للمختبر	
	<b>Material Covered</b>
<b>Week 1</b>	Lab 1: Lab safety guide and laboratory glass wares
<b>Week 2</b>	Lab 2: Crystallization
<b>Week 3</b>	Lab 3: Liquid-liquid extraction
<b>Week 4</b>	Lab 4: Soxhlet extraction
<b>Week 5</b>	Lab 5: Extracting Caffeine from tea
<b>Week 6</b>	Lab 6: Simple and fractional distillation
<b>Week 7</b>	Lab 7: Determination of melting point and boiling point

<b>Learning and Teaching Resources</b> مصادر التعلم والتدريس		
	<b>Text</b>	<b>Available in the Library?</b>
<b>Required Texts</b>	Organic Chemistry by Jonathan Clayden, Nick Greeves, and Stuart Warren ( <b>2nd Edition</b> ): Offers in-depth explanations of organic chemistry concepts and real-life applications. 2012.	Yes
<b>Recommended Texts</b>	March's Advanced Organic Chemistry by Michael B. Smith and Jerry March (6th Edition): A reference text for advanced topics and detailed reaction mechanisms. 2007.	No
<b>Websites</b>	<b>Khan Academy:</b> Video tutorials on organic chemistry concepts and reaction mechanisms. <b>ChemSpider:</b> A free chemical structure database providing information on properties, reactions, and spectra of organic compounds.	

<b>Grading Scheme</b> <b>مخطط الدرجات</b>				
Group	Grade	التقدير	Marks (%)	Definition
<b>Success Group</b> <b>(50 - 100)</b>	<b>A</b> - Excellent	امتياز	90 - 100	Outstanding Performance
	<b>B</b> - Very Good	جيد جدا	80 - 89	Above average with some errors
	<b>C</b> - Good	جيد	70 - 79	Sound work with notable errors
	<b>D</b> - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	<b>E</b> - Sufficient	مقبول	50 - 59	Work meets minimum criteria
<b>Fail Group</b> <b>(0 – 49)</b>	<b>FX</b> – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	<b>F</b> – Fail	راسب	(0-44)	Considerable amount of work required
<b>Note:</b> Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				