



Academic Course Specification Form

استمارة توصيف المقرر الأكاديمي

القسم الخاص بالطالب Section Concerning the Student

1. Course Code:	CHEMY 322	1. رمز المقرر:
2. Course Title	Practical Organic Chemistry	2. اسم المقرر:
3. College:	Science	3. الكلية:
4. Department:	Chemistry	4. القسم:
5. Academic Program:	Bachelor of Science in Chemistry	5. البرنامج الأكاديمي:
6. Course Credits:	0-6-3	6. عدد الساعات المعتمدة:
7. Course NQF Level:	7	7. مستوى المقرر وفقا للإطار الوطني للمؤهلات:
8. Notional Hours:	136	8. عدد الساعات الافتراضية:
9. NQF Credits:	14	9. عدد الساعات المعتمدة للمقرر وفقا للإطار الوطني للمؤهلات:
10. Prerequisite:	CHEMY 321	10. المتطلب السابق للمقرر:
11. Lectures Timing & Location:		11. وقت المحاضرة ومكانها:
12. General Mode of Teaching and Learning	تقليدي Traditional	12. النمط العام للتعليم والتعلم:

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May 2024

Changing any elements of the form is strictly prohibited.
يرجى عدم تغيير أي عنصر من عناصر الاستمارة

13. Course Coordinator:		13. منسق المقرر:
14. Course Instructor:		14. مدرّس المقرر:
15. Office Hours and Location:		15. الساعات المكتبية ومكانها:
16. Instructor's Email:		16. البريد الإلكتروني لمدرّس المقرر:
17. Academic Year:		17. السنة الأكاديمية:
18. Semester:		18. الفصل الدراسي:
19. Textbook(s):	19. الكتب الدراسية للمقرر:	
"Experimental Organic Chemistry. Principles and Practice" by L. M. Harwood & C. J. Moody. Blackwell Science, 3rd edition. 2017.		
20. References:	20. المراجع:	
21. Other Learning Resources Used (e.g. e-learning, field visits, periodicals, software, etc.):	21. مصادر التعلّم الأخرى (مثال: التعلّم الإلكتروني، زيارات ميدانية، دوريات، برمجيات، إلخ...)	
22. Course Description (as published in the College Catalogue):	22. توصيف المقرر (حسب ما ورد في دليل الكلية):	
Application of different laboratory techniques to synthesize, purify, identify, and characterize organic compounds; utilization of TLC, column chromatography, and some spectroscopic techniques; acid-base extraction, distillation, and isolation methods; advanced preparations of some multistep syntheses and performing organic reactions of the following general types: substitution, addition, elimination, cyclization, oxidation, reduction and alkylation; electrophilic aromatic substitution; Fischer esterification; photosynthesis reactions; reduction of carbonyl compounds; and aldol condensation.		
1. Course Intended Learning Outcomes (3 to 5 CILOs):	2. Course Intended Learning Outcomes (3 to 5 CILOs):	
1. Use advanced skills to apply principles of organic chemistry to conduct laboratory experiments		
2. Describe the more specialized organic laboratory techniques to synthesize, purify and characterize organic compounds.		
3. Compose comprehensive scientific reports individually by using experimental and library-retrieved data.		
4. Analyze scientific data using advanced skills.		
5. Design presentation to effectively communicate relevant research topics.		

3. Course Assessment Percentages (as per Regulations of Study and Examination at the University of Bahrain):		23. أساليب التقييم ونسبها المئوية (بحسب نظام الدراسة والامتحانات في جامعة البحرين):	
Assessment التقييم	Type النوع	Percentage النسبة	Assessment Date تاريخ التقييم
presentation	Individual فردي	10%	
Tests	Individual فردي	35%	
Laboratory/Practical	Individual فردي	15%	
Final examination	Individual فردي	40%	
Total	100%		
4. Description of Topics Covered		24. وصف الموضوعات التي ينبغي تناولها:	
<i>Topic Title</i> (e.g. chapter/experiment title) الموضوع		<i>Description</i> التفصيل	
Laboratory Safety and Waste Disposal Crystallization Melting Points Application of different laboratory techniques to synthesize, purify, identify, and characterize organic compounds		The students will be aware of the location of the emergency eyewash station, safety shower and fire extinguisher. Learn first aid procedures for acid and alkali spills on the skin. Check for specific precautions in using different chemicals and learn the proper disposing procedures for solid and liquid waste in the laboratory. Practice using crystallization and mp techniques for purifying and identifying the products	
Utilization of TLC, column chromatography, and some spectroscopic techniques		Practice using TLC method and some spectroscopic techniques to examine purity and identity compounds.	
Experiment 1: Isolation of Caffeine from Tea		Describe the extraction method and how to use the extraction system properly. Use acid-base extraction to isolate caffeine from tea. Define and calculate the partition coefficient. Use crystallization method to purify caffeine	
Experiment 2: Steam Distillation		Describe the distillation method, its classifications & purposes. Conduct steam distillation for isolation of Eugenol from cloves. Use acid-base extraction to check and obtain pure Eugenol	
Experiment 3: Fischer Esterification, Synthesis of methyl benzoate		Describe the distillation method, its classifications & purposes. Conduct steam distillation for isolation of Eugenol from cloves. Use acid-base extraction to check and obtain pure Eugenol	
Experiment 4: Nitration of Methyl Benzoate		Describe electrophilic substitution reaction of aromatic compounds and apply this reaction in the nitration of methyl benzoate. Draw complete mechanism for the nitration of methyl benzoate. Practice filtration,	

				recrystallization and measuring the mp techniques.
Experiment 5: Photochemistry: The Synthesis of Benzopinacol				Describe photosynthesis reactions, its classification, and apply this reaction in the synthesis of benzopinacol. Draw proper mechanism for this reaction.
Experiment 6. Reduction of carbonyl compounds using NaBH ₄				Define reduction reaction. Practice reduction of carbonyl compounds such as aldehydes, ketones, esters, acids etc.
Experiment 7. Identification of Aldehydes and Ketones				In this experiment is to perform several chemical tests to differentiate between aldehydes and ketones and identify the unknown compounds
Experiment 8. Dibenzalacetone by the aldol Condensation				Define and explain about aldol condensation, synthesize of Dibenzalacetone by the Aldol condensation and its recrystallization and purification by recrystallization.
Experiment 9. Column chromatography for lycopene and beta carotene				Practice using column chromatography method for the isolation of lycopene and beta-carotene and identification by TLC and spectroscopic techniques
Experiment 10. Aspirin synthesis				The synthesis of Aspirin by esterification reaction. The resultant aspirin will be purified by recrystallization. Identification of the product and its purity by different chemical and analytical techniques
Experiment about substitution reactions				
Experiment about the addition reactions				
Experiment about the elimination reactions				
Experiment about the cyclization reactions				
Experiment about the oxidation reactions				
Experiment about the alkylation reactions				
5. Weekly Schedule				25. الجدول الأسبوعي
Week الأسبوع	Date التاريخ	Topics Covered الموضوعات المتناولة	CILOs مخرجات التعلم للمقرر (CILOs)	Teaching/Assessment Mode and Method منهجية ونمط التدريس/التقييم

1		1. Laboratory Safety and Waste Disposal Crystallization Melting Points Application of different laboratory techniques to synthesize, purify, identify, and characterize organic compounds 2. Utilization of TLC, column chromatography, and some spectroscopic techniques	1,2,3, 4	Traditional تقليدي
2		1. Isolation of Caffeine from Tea Leaves 2. Steam Distillation	1,2,3, 4	Traditional تقليدي
3		1. Fischer esterification, Synthesis of methyl benzoate 2. Nitration of Methyl Benzoate	1,2,3, 4	Traditional تقليدي
4		Photochemistry: The Synthesis of Benzopinacol	1,2,3, 4	Traditional تقليدي
5		Reduction of carbonyl compounds using NaBH ₄	1,2,3, 4	Traditional تقليدي
6		Identification of Aldehydes and Ketones	1,2,3, 4	Traditional تقليدي
7		Dibenzalacetone by the aldol Condensation	1,2,3, 4	Traditional تقليدي
8		Column chromatography for lycopene and beta carotene	1,2,3, 4	Traditional تقليدي
9		Aspirin synthesis	1,2,3, 4	Traditional تقليدي
10		Experiment about substitution reactions	1,2,3, 4	Traditional تقليدي
11		Experiment about the addition reactions	1,2,3, 4	Traditional تقليدي
12		Experiment about the elimination reactions	1,2,3, 4	Traditional تقليدي
13		Experiment about the cyclization reactions	1,2,3, 4	Traditional تقليدي
14		Experiment about the oxidation and alkylation reactions	1,2,3, 4	Traditional تقليدي
15		Project/presentation	4,5	Traditional تقليدي
16				Choose an item.
6. Academic Integrity Statement			26. بيان النزاهة الأكاديمية	

<p>Students are to observe the highest level of honesty and academic ethics in pursuit of their academic goals as per UOB Regulations of Student Conduct and Academic Integrity, Anti-plagiarism Policies, and Students' Rights and Responsibilities Handbook. The consequences for cheating, plagiarism, unauthorized collaboration, and other forms of academic dishonesty can be very serious and will be dealt with as per the aforementioned policies and regulations.</p>	<p>يتعين على الطلبة الالتزام بأعلى مستويات الصدق والأمانة والأخلاق الأكاديمية في سعيهم لتحقيق أهدافهم الأكاديمية وفقاً للوائح سلوك الطلاب والنزاهة الأكاديمية، سياسات مكافحة الانتحال، ودليل حقوق الطلبة واجباتهم، المعمول بها في جامعة البحرين. يمكن لعواقب الغش والسرقة الأدبية والتعاون غير المصرح به وغيرها من أشكال عدم الأمانة الأكاديمية أن تكون خطيرة للغاية وسيتم التعامل معها وفقاً للسياسات واللوائح المذكورة آنفاً.</p>
<p>7. Attendance and Absence Regulations</p>	<p>27. نظام الحضور والغياب</p>
<p>Students are required to adhere to regular attendance for class lectures and practical sessions, as determined by the nature of the course, as per Article (33) of Regulations of Study and Examination at the University of Bahrain.</p>	<p>يجب على الطلبة الالتزام بالحضور المنتظم للمحاضرات الصفية والعملية، حسبما تحدده طبيعة المقرر الدراسي، ووفقاً للمادة (33) من نظام الدراسة والامتحانات في جامعة البحرين.</p>