



Academic Course Specification Form

استمارة توصيف المقرر الأكاديمي

القسم الخاص بالطالب Section Concerning the Student

1. Course Code:	CHEMY 423	1. رمز المقرر:
2. Course Title	Selected topics in Heterocyclic 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:	3-0-3	6. عدد الساعات المعتمدة:
7. Course NQF Level:	8	7. مستوى المقرر وفقاً للإطار الوطني للمؤهلات:
8. Notional Hours:	133	8. عدد الساعات الافتراضية:
9. NQF Credits:	13	9. عدد الساعات المعتمدة للمقرر وفقاً 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:

1 University of Bahrain – Quality Assurance & Accreditation Center - Academic Course Specification Form
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:	
Heterocyclic Chemistry, 5th Edition, John A. Joule, Keith Mills, ISBN: 978-1-405-13300-5, 2010 Heterocyclic Chemistry; Raj K. Bansal, 2020 Heterocyclic chemistry at a glance / John Joule, Keith Mills. - 2nd ed, 2012		
20. References:	20. المراجع:	
Shriver & Atkins – Inorganic Chemistry 6th Edition 2014 (Oxford) Lippard & Berg, “Principles of Bioinorganic Chemistry” (1994) University Science Books, Mill Valley, California		
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، الخ...)	
Learning through Microsoft Teams and Ultra Black Board		
22. Course Description (as published in the College Catalogue):	22. توصيف المقرر (حسب ما ورد في دليل الكلية):	
Introduction to heterocyclic chemistry; nomenclature, synthetic methods, chemical properties, natural occurrence, and biological importance; aromaticity of heterocyclic compounds; heterocyclic analogues of cyclopentadiene; heterocyclic analogues of benzene; heterocyclic analogues of naphthalene; fused ring systems involving five- and six-membered rings		
23. Course Intended Learning Outcomes (3 to 5 CILOs):	23. مخرجات التعلّم للمقرر (CILOs) (3 إلى 5 مخرجات تعليمية):	
1. Identify the principles of advanced reactions of heterocyclic compounds and their mechanisms		
2. Critically identify structure property relationship of different and complex classes of the heterocyclic compounds.		
3. Describe proper mechanism of different classes of heterocyclic compounds		
4. Evaluate mechanistic and synthetic problems associated with some complex organic reactions.		

5. Use special skills to investigate organic transformation problems using library resources and chemical databases.			
24. Course Assessment Percentages (as per Regulations of Study and Examination at the University of Bahrain):		24. أساليب التقييم ونسبها المئوية (بحسب نظام الدراسة والامتحانات في جامعة البحرين):	
Assessment التقييم	Type النوع	Perc enta ge النسبة	Assessment Date تاريخ التقييم
Quizzes	Individual فردي	10%	
Tests	Individual فردي	35%	
project	Pair ثنائي	15%	
Final Exam	Individual فردي	40%	
Total	100%		
25. Description of Topics Covered		25. وصف الموضوعات التي ينبغي تناولها:	
Topic Title (e.g. chapter/experiment title) الموضوع		Description التفصيل	
1		Common structural types of heterocycles, classification and nomenclature of heterocycles, nomenclature of substituted and fused ring heterocyclic compounds	
2		structure of aromatic five membered heterocyclic compounds. Synthesis and reactions of heterocyclic compounds, including one and two hetero atoms five and six-member rings and fused rings such as (pyrroles, furans, thiophenes, pyrazol etc.)	
3		General properties, electronic structure • Electrophilic substitution of pyridines, pyrimidine, pyrazines etc • Nucleophilic substitution of pyridines, pyrimidine, pyrazines etc	
4		Strategies for accomplishing regiocontrol during electrophilic substitution Indoles • synthesis and properties of (indole, benzofuran), heterocyclic analogues of naphthalene (quinoline, isoquinoline etc.); Comparison of electronic structure and reactivity of indoles to that of pyrroles • Reactions of indoles with electrophiles • Mannich reaction of indoles to give 3-substituted indoles (gramines) •	

5			Discusses the importance of these molecules in the pharmaceutical and other industries.	
26. Weekly Schedule			26. 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		Common structural types of heterocycles, classification and nomenclature of heterocycles,	1,2,3	Traditional تقليدي
2		nomenclature of substituted and fused ring heterocyclic compounds	1,2,3	Traditional تقليدي
3		structure of aromatic five membered heterocyclic compounds. Synthesis and reactions of heterocyclic compounds, including one and two hetero atoms	1,2,3	Traditional تقليدي
4		Synthesis and reactions of heterocyclic compounds, including one and two hetero atoms five and six-member rings and fused rings such as (pyrroles, furans)	1,2,3	Traditional تقليدي
5		Synthesis and reactions of heterocyclic compounds, including one and two hetero atoms five and six-member rings and fused rings such as (thiophenes, pyrazol etc.)	1,2,3	Traditional تقليدي
6		General properties, electronic structure • Electrophilic substitution of pyridines, pyrimidine, pyrazines etc	1,2,3	Traditional تقليدي
7		Electrophilic substitution of pyridines, pyrimidine, pyrazines etc	1,2,3	Traditional تقليدي
8		Electrophilic substitution of pyridines, pyrimidine, pyrazines etc	1,2,3	Traditional تقليدي
9		Nucleophilic substitution of pyridines, pyrimidine, pyrazines etc	1,2,3	Traditional تقليدي
10		Strategies for accomplishing regiocontrol during electrophilic	1,2,3	Traditional تقليدي

		substitution Indoles • synthesis and properties of (indole),		
11		synthesis and properties of (benzofuran),	1,2,3	تقليدي Traditional
12		heterocyclic analogues of naphthalene (quinoline, isoquinoline etc.);	1,2,3	تقليدي Traditional
13		Comparison of electronic structure and reactivity of indoles to that of pyrroles	1,2,3	تقليدي Traditional
14		Reactions of indoles with electrophiles	1,2,3	تقليدي Traditional
15		Mannich reaction of indoles to give 3-substituted indoles (gramines) Discusses the importance of these molecules in the pharmaceutical and other industries.	1,2,3 4	تقليدي Traditional
16				
27. Academic Integrity Statement			27. بيان النزاهة الأكاديمية	
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.			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 وواجباتهم ، 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.	
28. Attendance and Absence Regulations			28. نظام الحضور والغياب	
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 .			يجب على الطلبة الالتزام بالحضور المنتظم للمحاضرات الصفية والعملية، حسبما تحدده طبيعة المقرر الدراسي، ووفقاً للمادة (33) من نظام الدراسة والامتحانات في جامعة البحرين .	