

نموذج توصيف مقرر
Course Description Form

Name of College\Faculty : Science

Name of Department: Chemistry

اسم الكلية:

اسم القسم العلمي:

Course Name	Physical Organic Chemistry	اسم المقرر
Course No.	CHEM 459	رقم المقرر
No. of Credits	3	عدد الوحدات
Theoretical Hours	3	عدد الساعات النظرية
Practical Hours	0	عدد الساعات المحلّية
Course topics		مواضيع المقرر
Description of molecules and reactive intermediates: radicals, carbenes, carbocations, and carbanions. Substituent effects: steric, resonance, inductive, and field effects. General tools for mechanistic studies of organic reactions, e.g., crossover experiment (intramolecular or intermolecular reaction?) and isotope labeling experiments (which bonds are broken/formed?), kinetic analysis, and the relationship between structure and reactivity: linear free energy relationship (LFERs): the Hammett reaction constant values. Detailed mechanistic description and discussion of basic organic reactions using the tools described above, e.g., nucleophilic addition to aldehyde and ketone, nucleophilic aliphatic substitution (SN2, SN1, neighboring group assistance, ion-pairs), elimination (E1/E2/E1cb, stereo and regiochemistry), and pericyclic reactions (electrocyclic).		
Text book: (Name, Author , Year , Publisher)		عنوان الكتاب : (الاسم ، المؤلف ، سنة الطبع ، دار النشر)
E. V. Anslyn & D. A. Dougherty, Modern Physical Organic Chemistry, University Science Books, 2006.		
References: (Name , Author , Year . Publisher)		عنوان المرجع : (الاسم ، المؤلف ، سنة الطبع ، دار النشر)
None.		



Prerequisites CHEM 215 + CHEM 355			متطلبات المقرر		
Grading	Exams		%		الاختبارات
	Quizzes		%		امتحانات قصيرة
	H.W.		%		واجبات
	Project (field study)		%		مشاريع (دراسة ميدانية)
	Final		%		الاختبار النهائي
	%				آلية رصد المقرر

Course objectives					
No.	Course Objectives (Learning Outcomes)	Example(s) of relevant (Topics and activities)	Recommended Level to satisfy the objectives		
			High	Medium	Low
1	To gain a detailed understanding of reaction mechanisms (Fundamentals).			X	
2	To learn about tools to decipher reaction mechanisms.		X		
3	To learn how to suggest, explain, evaluate, and confirm or reject a reaction mechanism.		X		
Fields					
Skills					
Coordinator (Name and Rank) :		Convener of the organic chemistry			
Signature and stamp :					
Date:		11\ 11 \2025			