معلومات المقرر * (Course Information):

اسم المقرر:	ميكانيكية التفاعلات العضوية
رقم المقرر:	CHM427
اسم ورقم المتطلب السابق:	كيمياء فراغية CHM325
اسم ورقم المتطلب المرافق:	-
مستوى المقرر:	الثامن
الساعات المعتمدة:	2

Module Title:	Mechanisms of organic reactions
Module ID:	CHM427
Prerequisite (Co-requisite) :	Stereochemistry , CHM325
Co-requisite :	-
Course Level:	Eighth Level
Credit Hours:	2

Module Description **وصف المقرر :**

This course analyses in detail the mechanisms of organic reactions. Tools for rationalizing and predicting the reactivity of molecules will be explained, including kinetic isotope effects, Hammett correlations, Bronsted acid/base catalysis, isotopic labeling. These tools will be used to analyze the mechanisms of several important reactions and processes that form the core of organic chemistry, including addition, elimination and substitution reactions, isomerization and rearrangement reactions and thermal pericyclic reactions as well as radical reaction

Module Aims **أهداف المقرر :**

1	Recognize the basic knowledge of organic reaction mechanism of substitution and elimination (Sn1, Sn2, E1, E2, E1cb)	1
2	Apply the reaction mechanisms producing the basic principles which determines chemical reactivity in organic chemistry	2

جامعة المجمعة Majmaah University قسم الكيمياء Department of Chemistry College of Science in Zulfi

3	Understand the fundamentals of reaction kinetics and be able to apply to the determination of reaction mechanism.	3
4	Draw products and reaction mechanisms for many reactions including ,aliphatic, aromatic compounds, carbonyl-containing compounds.	

Learning Outcomes: **مخرجات التعليم:**

Upon successful completion of this course, the student will be able to :		
1	Recognize the different methods for identification the organic reaction mechanism.	1
2	describe mechanisms of reactions: free radical, nucleophilic substitution, elimination and electrophilic addition	2
3	Write reaction mechanisms equations of (Sn1, Sn2, E1, E2, E1cb).draw mechanisms for complex reactions, to predict reactivity, to appreciate how orbital interactions affect structure and reactivity. Students will be able to propose more complex syntheses	3
4	Apply this knowledge to predict the major product in organic reactions, such as those involving hydrocarbons, alcohols, alkyl halides, and alkenes	4
5	Analyze the nature of a reagent: as a nucleophile, free radical, or electrophile and use this knowledge to propose the synthesis of organic compounds, such as a hydrocarbons, alkyl halides, alcohols, or alkenes	5
6	Propose reaction mechanisms using the tools of mechanistic organic chemistry, including Bronsted and Hammett relationships, kinetic isotope effects, isotope labeling, solvent effects, rate equations	6
7	Solving some of the exercises in groups	7
8	Communicate effectively in oral and written form.	8
9	Use the web chemical data base and chemical programs	

Course Contents **محتوى المقرر:**

ساعات التدريس (Hours)	عدد الأسابيع (Weeks)	قائمة الموضوعات (Subjects)
2	1	A general introduction to the mechanics of organic reactions include(atomic orbitals - the bonds in organic compounds - properties of organic reactions) - Physical and chemical methods for the identification of the reaction mechanism
2	2	reaction kinetics, Isotope labeling, intermediate determination, Reactions; Acids and Bases
4	2	Nucleophilic substitution reactions on saturated carbon atom
4	2	Nucleophilic and electrophonic substitution reactions on aromatic compounds.

6	3	Elimination reactions and the factors that affect them
4	2	Addition reactions on the double bond (carbon-carbon).
4	2	Addition reactions on carbonyl group
2	1	Rearrangement reactions

Textbook and References: الكتاب المقرر والمراجع المساندة:

ISBN	سنة النشر Publishing Year	اسم الناشر Publisher	اسم المؤلف (رئيسي) Author's Name	اسم الكتاب المقرر Textbook title
978-3-642-03650-7	2010	Springer-Verlag Berlin Heidelberg	Reinhard Bruckner	Organic Mechanisms Reactions, Stereochemistry and Synthesis
	سنة النشر Publishing Year	اسم الناشر Publisher	اسم المؤلف (رئيسي) Author's Name	اسم المرجع Reference
9781119977872	2014	John Wiley & Sons, Ltd	A. C. Knipe	Organic Reaction Mechanisms

* يتم تعبئة معلومات المقرر فقط باللغتين العربية والانجليزية وباقي المعلومات بلغة التدريس المعتمدة ويكرر لكل مقرر في الخطة الدراسية

* Course Information should be filled in Arabic and English. Other information should be filled using the approved teaching language at the college.

جامعة المجمعة
Majmaah University
قسم الكيمياء
Department of Chemistry
College of Science in Zulfi