

معلومات المقرر \* (Course Information):

اسم المقرر:	أطياف المركبات العضوية
رقم المقرر:	CHM428
اسم ورقم المتطلب السابق:	-
اسم ورقم المتطلب المرافق:	-
مستوى المقرر:	الثامن
الساعات المعتمدة:	3
<b>Module Title:</b>	Spectroscopy of organic compounds
<b>Module ID:</b>	CHM428
<b>Prerequisite (Co-requisite) :</b>	Electrical and Spectroscopic Analysis, CHM413
<b>Co-requisite :</b>	-
<b>Course Level:</b>	eighth Level
<b>Credit Hours:</b>	3

وصف المقرر :

Introduction, Structural elucidation by Spectroscopic Methods; Ultraviolet (UV) and Visible, Infrared (IR), <sup>1</sup>H and <sup>13</sup>C Nuclear Magnetic Resonance and Mass Spectrometry; Application of these spectroscopic tools to identify organic compounds

Characterization and identification of compounds using spectrometric methods with an emphasis on mass spectrometry, infrared spectroscopy, and one- and two-dimensional nuclear magnetic resonance spectroscopy.

أهداف المقرر :

1	Understand in detail the concepts, theories and the application of spectroscopy
2	Explain the different types of spectrum:( UV, Vis) ,IR, nmr and mass spectroscopy
3	Identify organic compounds structure using its :( UV,Vis) ,IR, nmr and mass spectroscopy

4	Apply the theories, concepts and analytical ability in research.	
5	Utilize the concepts and understanding of spectroscopy in organic structure determination	

Learning Outcomes:

مخرجات التعليم:

Upon successful completion of this course, the student will be able to :

1	Describe the principles of how to use UV spectra in the identifications of organic compounds	
2	Explain that the absorption of infrared radiation arises from molecular vibrations.	
3	Demonstrate understanding that groups of atoms within a molecule absorb infrared radiation at characteristic frequencies.	
4	Summarize understanding that chemical shifts depend on the chemical environment of hydrogen atoms	
5	Recall the meaning of and identify the base peak, molecular ion peak, M+1 peak and fragmentation ions in a mass spectrum	
6	Apply infrared spectra to deduce functional groups present in organic compounds given wavenumber data	
7	Determine the relative number of hydrogen atoms in different chemical environments deduce by Using integration curves .	
8	Suggest formulae for the fragment ions in a given mass spectrum	
9	Identify the formulas of some unknown organic compounds from their spectrum	
10	Solving some of the exercises in groups	
11	Communicate effectively in oral and written form.	
12	Use the web chemical data base	
13	Do Wood –Wards & Fieser calculation	

Contents:

ساعات التدريس (Hours)	عدد الأسابيع (Weeks)	قائمة الموضوعات (Subjects)
3	1	Electromagnetic radiation spectrum

محتوى المقرر: Course





9	3	Ultra violet and visible spectra
6	2	IR spectra :absorption of functional groups, and applications in organic chemistry .
12	4	All types of nuclear magnetic resonance spectra .Identification of some functional groups
9	3	Mass spectra of organic compounds
6	2	Identifications of organic compounds using All types of spectra

**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
978-81-89473-86-0	2009	Oxford Book Company Jaipur, India	B. D. Mistry	Handbook of Spectroscopic Data: Chemistry – UV, IR, <sup>1</sup> HNMR, <sup>13</sup> CNMR and Mass Spectrometry
ISBN	سنة النشر Publishing Year	اسم الناشر Publisher	اسم المؤلف (رئيسي) Author's Name	اسم المرجع Reference
978-0-470-31926-0 (H/B) 978-0-470-31927-7 (P/B)	2008	JOHN WILEY AND SONS, LTD	L D Field , S Sternhell, J R Kalman	Organic Structures from Spectra Fourth Edition

\* 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.



