

معلومات المقرر \* (Course Information):

اسم المقرر:	معمل كيمياء متقدم
رقم المقرر:	كيم 356
اسم ورقم المتطلب السابق:	-
اسم ورقم المتطلب المرافق:	CHM334
مستوى المقرر:	السادس
الساعات المعتمدة:	(1+4)3
<b>Module Title:</b>	<b>Advanced chemistry laboratory</b>
<b>Module ID:</b>	<b>CHM356</b>
<b>Prerequisite (Co-requisite):</b>	<b>CHM334</b>
<b>Co-requisite:</b>	-
<b>Course Level:</b>	<b>6<sup>th</sup> level</b>
<b>Credit Hours:</b>	<b>(1+4)3 hrs.</b>

Module Description

وصف المقرر:

The course covered the following topics: This advanced laboratory emphasizes chemical synthesis and characterization of compounds. This course equips students with advanced laboratory techniques skills necessary for effective laboratories. practical use of modern instruments in laboratory. Emphasis is on the operational principles and application of modern instrumental methods for quantitative determination of chemical compounds. Use Spectral techniques, separation techniques, thermal analysis, electrochemical techniques, adsorption techniques, and the synthesis and characterization of nanomaterials is also featured.

Module Aims

1	<b>For students undertaking this course, the aims are to:</b> -knowledge about Instrumental Analysis: Nature of instrument, calibration methods selecting methods, Electrical Components and Circuits, Signals and Noise
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2	- study Components of Optical Instruments: Sources of radiation, wavelength selectors, signal processors	
3	-Describe Introduction to Spectrophotometric methods: Properties of electromagnetic radiation , and UV-Visible Molecular Absorption Spectroscopy	
4	-Study the Applications of UV-Visible Molecular Absorption Spectrophotometry.	
5	Study Optical Atomic Spectroscopy, Atomic Absorption and Fluorescence	
6	Study Chromatographic Separations Gas ,liquid Chromatography	

**Learning Outcomes:**

مخرجات التعليم:

1	describe the scientific and operational principles of the methods used.	
2	describe the operation of instrument components and the layout of those components in prototypical instrument	
3	calculate analyte concentrations and uncertainty from typical measurements; evaluate results of measurements using figures of merit and/or knowledge of noise and common interferences	
4	select an appropriate method for important classes of analytes and discuss a methods' .advantages and disadvantages in the context of particular analyses	
5	Learn how to search for information through library and internet to Participate Effective in the activities of the methodology ,	
6	Use information technology , modern computer tools and programs to communicate with teacher through solve problems and work in groups.	
7	Use laboratory tools and security and safety tools properly	

**Course Contents:**

محتوى المقرر:

ساعات التدريس (Hours)	عدد الأسابيع (Weeks)	قائمة الموضوعات (Subjects)
1	1	Introduction to LabVIEW and training to use.
1	1	Introduction Virtual Labs and application in some experiments
1	1	Determination of Calcium, Iron, and Copper in Food by Atomic Absorption
2	2	Spectrophotometry in the Visible Region: Absorption Spectra Beer's law and the Simultaneous Analysis of a Two Component Mixture



2	2	Synthesis and identification of organic compound.
2	2	Resolution and Qualitative identification of Hydrocarbons by Gas Chromatography
1	1	Determination of Pharmaceuticals using chromatographic apparatus.
1	1	Determination of Caffeine in Beverages
3	3	Preparation of nanoparticles and study their effect on concentration measurements.
1	1	Revision
Practical		
52 = 4 x 13	13	Determination of Calcium, Iron, and Copper in Food by Atomic Absorption Spectrophotometry in the Visible Region: Absorption Spectra, Beer's law, and the Simultaneous Analysis of a Two Component Mixture  Synthesis and identification of organic compound.  Resolution and Qualitative identification of Hydrocarbons by Gas Chromatography  Determination of Pharmaceuticals using chromatographic apparatus.  Determination of Caffeine in Beverages  Preparation of nanoparticles and study their effect on concentration measurements.  Revision

Note: 1contact hour = 50 min

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
<ul style="list-style-type: none"> <li>• ISBN-10: 9781305577213</li> <li>• ISBN-13: 978-1305577213</li> </ul>	2017	Cengage .Learning,	Skoog, Holler, and Crouch	Principles of Instrumental Analysis, 7 <sup>th</sup> ed.
ISBN	سنة النشر Publishing Year	اسم الناشر Publisher	اسم المؤلف (رئيسي) Author's Name	اسم المرجع Reference
	2006	6th Edition, by; Thomson .Brooks/Cole,	Skoog, Holler, and Crouch	Principles of Instrumental Analysis,
	1984	Wiley	Sawyer, Heinemen, and Beebe	Chemistry Experiments for Instrumental Methods.



	2006 3rd Edition	, Prentice Hall	Travis and Kring	LabVIEW for Everyone
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Websites:

[http://www.nap.edu/openbook.php?record\\_id=6160](http://www.nap.edu/openbook.php?record_id=6160)

<http://pogil.org/>

and <http://www.pcrest.com/PC/pub/index.html>

<http://sine.ni.com/nips/cds/view/p/lang/en/nid/207573>

\* 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.



