

معلومات المقرر * (Course Information):

اسم المقرر:	كيمياء تحليلية -1
رقم المقرر:	CHM111
اسم ورقم المتطلب السابق:	CHEM-101, كيمياء عامه (1)
اسم ورقم المتطلب المرافق:	لا يوجد
مستوى المقرر:	المستوى الثاني
الساعات المعتمدة:	3
Module Title:	Analytical Chemistry -1
Module ID:	CHM111
Prerequisite (Co-requisite) :	CHM-101, General Chemistry- 1
Co-requisite :	No requests
Course Level:	Level 2
Credit Hours:	3 Credit Hours

Module Description

وصف المقرر :

This course is a combined lecture -laboratory class, in which students will be exposed to the theory and practice of Analytical chemistry with emphasis on qualitative chemical analysis, Basic Equipment and Instrumentation, Numbers in Analytical Chemistry, Units for Expressing Concentration, Stoichiometric Calculations, Ionic Equilibria, the common ion effect and solubility. Two lecture hours and one two-hour laboratory session per week. Three credits. Prerequisite CHEM-101.

Module Aims

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| 1 | This course aims to familiarize students with the basic principles of analytical chemistry. |
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Learning Outcomes: By the end of my course, students should be able to

1	Describe the general principle of qualitative analysis	
2	Outline of the general procedure of qualitative analysis	
3	Apply the appropriate mathematical formula to solve the problems relating to course concepts	
4	Apply the concepts of qualitative analysis to practically analyze and identify the composition of unknown samples	
5	Work independently and as part of a team	
6	Demonstrate the ability to use library resources and scientific databases to obtain information about a topic, chemical, chemical technique, or an issue relating to chemistry	
7	Demonstrate good and safe handling of laboratory chemicals, glassware and equipment during experiments	

Course Contents:

محتوى المقرر:

ساعات التدريس (Hours)	عدد الأسابيع (Weeks)	قائمة الموضوعات (Subjects)
4	2	Introduction to Analytical Chemistry - Applications - Classifying Analytical Techniques Basic Equipment and Instrumentation - Analytical Perspective
6	3	Numbers in Analytical Chemistry - Units for Expressing Concentration (Molarity and Formality - Normality - Molality - Weight, Volume, and Weight-to-Volume Ratios - Converting Between Concentration Units - p- Functions)
2	1	Stoichiometric Calculations (Conservation of Mass - Conservation of Charge Conservation of Protons - Conservation of Electron Pairs - Conservation of Electron) Using Conservation Principles in Stoichiometry Problem - questions and problem
6	3	The Acid Base properties of Water - pH scale - strength of acids and



		<p>bases</p> <p>Weak acids and acid ionization constants</p> <p>Weak bases and base ionization constants</p> <p>The Relationship Between the Ionization Constants of Acids and Their Conjugate Bases</p>
4	2	<p>diprotic and polyprotic acids</p> <p>molecular structure and strength of acids</p> <p>acid - base properties of salts</p> <p>acid-base properties of oxides and hydroxides</p> <p>Lewis acids and bases</p> <p>questions and problems</p>
4	2	<p>Homogeneous versus Heterogeneous Solution Equilibria</p> <p>the common ion effects- buffer solution - solubility equilibria</p> <p>separation of ions by fractional precipitation</p>
4	2	<p>the common ion effect and solubility</p> <p>complex ion equilibria and solubility</p> <p>application of the solubility product principle to qualitative analysis</p> <p>questions and problems</p>
30	15	
laboratory		
2	1	lab safety rules and regulations
2	1	Classification of the Cations and Anions
2	3	qualitative analysis of Anions
2	6	qualitative analysis of Cations
4	2	Identify the ions in an unknown salt
26	13	





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
ISBN-13: 978- 0495558286	2013	Brooks Cole; 9 editions (January 1, 2013)	Douglas A. Skoog	Fundamentals of Analytical Chemistry 9th Edition
	سنة النشر Publishing Year	اسم الناشر Publisher	اسم المؤلف (رئيسي) Author's Name	اسم المرجع Reference
ISBN-13: 978- 0078021510	2015	McGraw-Hill Education; 12 edition (January 8, 2015)	Raymond Chang And Golds Kenneth	Chemistry 12 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.



