

معلومات المقرر \* (Course Information):

اسم المقرر:	أطوار المادة والمحاليل
رقم المقرر:	CHEM131
اسم ورقم المتطلب السابق:	كيمياء عامة - ١ - CHEM-101
اسم ورقم المتطلب المرافق:	لا يوجد
مستوى المقرر:	المستوي الثاني
الساعات المعتمدة:	٢ (١+٢)

Module Title:	Phases of Substances and Solutions
Module ID:	CHM131
Prerequisite (Co-requisite) :	General Chemistry -1, CHEM101
Co-requisite :	None
Course Level:	Second Level
Credit Hours:	٢ (١+٢)

Module Description

وصف المقرر :

This course includes two parts:

Part A: Phases of Substances ,Phase Transformation of pure substance , Gibbs Phase Rule and Phase Diagrams of one-component system, two – component system , Multi component system .

Part B: Solutions .Types of solutions, colligative properties.

Laboratory: Experimental part is designed to complete the lecture material.





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Module Aims

أهداف المقرر :

1	Study the phase of substance	١
2	Study the Gibbs Phase Rule.	٢
3	Study the Phase Diagrams of one-component system, two – component system , Multi component system.	٣
4	Study the Types of solutions, solutions concentrations.	٤
5	Study types of solutions and the colligative properties	٥

مخرجات التعليم:

Learning Outcomes: successful students will be able to

1	Define the phase, phase rule, solvent and solute.	١
2	Discuss the colligative Properties	٢
3	Apply the phase rule to determine the number of components - phases- degrees of freedom of the different systems	٣
4	. Explain the graphs and the results obtained in the laboratory	٤
5	Work effectively in groups and exercise leadership when appropriate.	٥
6	Work effectively in groups and exercise leadership when appropriate.	٦
7	Apply the principles of safety when dealing with various tools , chemicals and devices.	٧

Course Contents:

محتوى المقرر:

ساعات التدريس (Hours)	عدد الأسابيع (Weeks)	قائمة الموضوعات (Subjects)
٢	٢	States of matter and the comparison between them , The equilibrium types
١	١	The system ,phase, component, degree of freedom
١	١	Gibbs Phase Rule , the equation for the phase
٢	٢	one-component system (CO <sub>2</sub> , H <sub>2</sub> O, Sulphur )
٢	٢	two-component system,
٢	٢	Multi component system







٢	٢	Solutions: Types of solutions,
٢	٢	Colligative Properties :Boiling point elevation, Freezing point depression, Osmotic pressure
١	١	Revision
Practical		
6	3	Relationship between solubility of two mixing Liquid
٦	3	Boiling point of two-component system
٦	٣	Set the distribution coefficient of two limited-mixing liquids
٦	٣	Application of phase rule for triple systems component
٢	١	Revision

**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: 978-0198769866 ISBN-10: 0198769865	٢٠١٨	Oxford University Press	Peter Atkins and etc.	Physical Chemistry 11 <sup>th</sup> ed.
ISBN	سنة النشر Publishing Year	اسم الناشر Publisher	اسم المؤلف (رئيسي) Author's Name	اسم المرجع Reference
-٩٧٨-٤٧١٥٢٨٧٤٦ ١٣	٢٠٠٠	Wiley	James E. Brady	General Chemistry: Principles and Structure

\* 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.



