

Planning and Quality Assurance Affairs

Form (A)

Course Specifications

General Information

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|----------------------------|-----------------------|
| Course name | General Chemistry (2) |
| Course number | CHEM1302 |
| Faculty | |
| Department | |
| Course type | College Needs |
| Course level | 1 |
| Credit hours (theoretical) | 3 |
| Credit hours (practical) | 0 |
| Course Prerequisites | |

Course Objectives

- 1 - This course aims to :
- 2 - Understand and be able to explain the general principles, laws, and theories of chemistry that are discussed and presented throughout the semester
- 3 - Use given information and other ideas in the solution of problems.
- 4 - Identify and calculate mathematical descriptions of the kinetics of chemical processes
- 5 - Demonstrate an understanding of chemical equilibrium and calculate solutions for equilibrium expressions.
- 6 - Demonstrate an understanding of acid-base equilibrium by calculating resulting values in pH and reactant/product concentrations for acid-base processes such as buffer solutions and titrations .
- 7 - Using concepts from solubility equilibria, calculate solution concentrations from solubility-product expressions and compound solubility.
- 8 - Understand the laws of thermodynamics and calculate the change in values of state functions for various physical and chemical processes.
- 9 - Perform calculations with colligative properties equations.

Intended Learning Outcomes

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| Knowledge and Understanding | <ul style="list-style-type: none"> * State the characteristics of liquids and solids, including phase diagrams and spectrometry. * Articulate the importance of intermolecular interactions and predict trends in physical properties. * Identify the characteristics of acids, bases, and salts, and solve problems based on their quantitative relationships. * Determine the rate of a reaction and its dependence on concentration, time, and temperature. * Apply the principles of equilibrium to aqueous systems using LeChatelier's Principle to predict the effects of concentration , pressure, and temperature changes on equilibrium mixtures. |
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Course Contents

- 1 - A continuation of general chemistry (I) which deals with gases, properties of solids, liquids, and solutions, studying of the intermolecular forces between solid and liquid molecules, reactions in aqueous solutions such as redox reaction, precipitation reactions and neutralization reaction, kinetics, equilibrium, electrochemistry and redox reaction. The student is introduced to techniques in qualitative analysis given an introduction in analytical chemistry through studying the acids-bases theories, ionic equilibria, calculating the pH of the solutions, principles of buffer solutions and solubility product, and finally the elements of thermodynamics and thermochemistry.

Teaching and Learning Methods

- 1 - Lectures
- 2 - power power presentation
- 3 - exercises solution
- 4 - exercises solution

Students Assessment

| <u>Assessment Method</u> | <u>TIME</u> | <u>MARKS</u> |
|-------------------------------------------------------|----------------------|--------------|
| two med term exams | week number: 5 and 9 | 30% |
| Final exam | week number 16 | 50% |
| quizzes and assignments, participating and attendance | every lecture | 10% |
| homeworks | weakly | 10% |

Books and References

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| Course note | Hand outs |
| Essential books | Chemistry, Chang 10th edition |
| Recommended books | Chemistry, Mortimer 6th edition |