Course Specifications

General Information

Course name	General Chemistry
Course number	PHCH1301
Faculty	
Department	
Course type	College Needs
Course level	1
Credit hours (theoretical)	3
Credit hours (practical)	0
Course Prerequisites	

Course Objectives

1 - to give the basic underground of basic concepts of general chemistry
2 - to provide the students basic underground of quantitative calculations of chemistry
3 - to provide the student with proper understanding of molecules, their structure and molecular geometry
4 - to provide the students with the basic knowledge about elements and periodic table
5 - to give the basic concepts of solutions and show how molecules behave in aqueous solutions
6 - to understand the concept of mole, molar mass and how they are used in stoichiometry
7 - to understand the concept of equilibrium and its types
8 - to understand the acid and base characters of chemicals

Intended Learning Outcomes

Knowledge and Understanding	* the student will be acknowledged about basic concept of general chemistry
	* the student will be able to perform chemical quantitative calculation
	* the student could be able to use the periodic table to predict physical and chemical properties of elements
	* the student will understand the physical properties of solutions
	* the student will be able to carry stoichiometric calculations
	* the student will be able to understand the importance of equilibrium in chemistry
Intellectual Skills	* the student will understand the relations between the different topics in chemistry
	* the student will be able to apply the basic concept learned in this course to search for more advanced topics
Professional Skills	* the student will be able to understand articles and reference books which is concerned with topics of general chemistry
	* the student will be able to make a more advanced reading on topics of general chemistry
General Skill	* the student will be more advanced in his learning capability
	* the student will be more advanced in chemical calculations
	* the student will be more advanced in preparing research reports
	* the student will be able to make a good relations between the different topics

Course Contents

1 - Chapter 1 : Introduction
2 - Chapter 2: Atoms, Molecules, and Ions
3 - Chapter 3: Stoichiometry
4 - Chapter 4: The Electronic Structure of Atoms
5 - Chapter 5: The Periodic Table
6 - Chapter 6: Chemical Bonding: ionic and Covalent Bonds
7 - Chapter 7: Molecular Geometry and Hybridization of Atomic Orbitals
8 - Chapter 8: Intermolecular Forces
9 - Chapter 9: Physical Properties of Solutions
10 - Chapter 10: Redox reactions in aqueous solutions
11 - Chapter 11: Chemical Equilibrium
12 - Chapter 12: Acids and Bases - Acid-Base Equilibria and Solubility Equilibria
13 - Chapter 13: Thermodynamics

Teaching and Learning Methods

1 - lectures administered as PowerPoints
2 - some lectures are intended for discussions and problem solving
3 - there are lectures recorded as videos

Students Assessment

Assessment Method	TIME	MARKS
quiz 1	third week second semester 2023	10
quiz 2	sixth week second semester 2023	10
midterm exam	eighth week second semester 2023	30
quiz 3	thirteenth week second semester 2023	10
final exam	sixteenth week second semester	40

Books and References

Course note	lectures prepared as power point by the lecturer
Essential books	Chang, R. (1986). General chemistry. Fifth edition.
Recommended books	Mortimer, Ch. Chemistry. Sixth edition.
Other References (Periodical, web sites, ... etc.)	chemistry LibreTexts: Homehttps://chem.libretexts.org

Knowledge and Skills Matrix

Main Course Contents	Study Week	Knowledge and Understanding	Intellectual Skills	Professional Skills	General Skill
Chapter 1: Introduction	1	the student should understand the following concepts: Definition of Chemistry - States of matter - Classifications of Matter - Physical and Chemical Properties of Matter	the student should understand the differences between the characters of types of matter	the student should be able to differentiate between the different types of matter	to be familiar with the different chemical terms
Chapter 2: Atoms, Molecules, and Ions	2	the student should understand the following concepts: The Structure of the Atom - Atomic Number, Mass Number, and Isotopes – Ions - Molecules and chemical formula.	-the student will be able to predict how molecules are built from atom- the basic unit	the student should be able to deal with the different types of chemical formulas	the student should be able to convert one chemical formula to another
chapter 3: Stoichiometry	2-4	the student should understand principles of stoichiometry	the student should be able to use chemical equations quantitatively	the student should be able to determine the molecular formula of unknown compounds, to determine purity of chemical substances and to determine percent yield of a chemical reaction	development of analyzing and mathematical skills
chapter 4:The Electronic Structure of Atoms Chapter 5: The Periodic Table	5-6	the student should understand the electronic configuration of atoms , periodic classification of , elements, and chemical bonding, molecular geometry, hybridization, polarity ,	the student should be able to predict the physical properties of elements according to its position in periodic table	the student should be able to predict the behavior of elements in chemicals bonding	the student will develop its ability to think

Chapter 6: Chemical Bonding: Ionic and Covalent Bonds Chapter 7: Molecular Geometry and Hybridization of Atomic Orbitals Chapter 8: Polarity and Intermolecular Forces	7-10	the student will study the following: Formula and nomenclature of Ionic Compounds - lewis structure and nomenclature of covalent compounds- resonance- molecular geometry and hybridization-	the student should be able to show the chemical formula of ionic and covalent compounds, to name them, to predict molecular geometry	the student should be able to predict the behavior of atoms in chemical reactions	developmen t of thinking skills
Chapter 9: Physical Properties of Solutions Chapter 10: Redox reactions in aqueous solutions	10-12	the student should understand the physical properties of solutions, solution stoichiometry, redox reactions in aqueous solutions	the student should be able to be able to predict the behavior of molecules in aqueous solutions	the student should be able to calculate concentration in solution by different concentration units and to balance redox reactions	developmen t of prediction and mathematic al skills
Chapter 11: Chemical Equilibrium Chapter 12: Acids and Bases - Acid-Base Equilibria and Solubility Equilibria Chapter 13: Thermodynamics	13-15	the student should understand the concept of chemical equilibrium, factors affect on equilibrium, acid -base equilibrium , the concept of acids and bases, solubility product of slightly soluble salts	the student should be able to differentiate acid from base and to make calculation about equilibrium	the student should be able to calculate pH of solution, to predict the direction of a chemical reaction, predict precipitation reaction, predict how to improve the yield of a chemical reaction	developmen t of thinking and mathematic al skills