

CHM 111 General Physical Chemistry (3 Units)

Department of Chemistry

Covenant University

1. CHM111

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Historical development of the atom: definition of atoms, Daltons atomic theory, relative atomic masses. Fundamental particles of the atom and atomic structure. Modern electronic theory of atoms; electronic configuration of the elements. Periodicity of the elements. Radioactivity: Stoichiometry: mole concept, chemical formulas, equations and calculations. States of matter: gas empirical gas laws, Ideal Gas Equation of State, qualitative treatment of kinetic theory of gases, real gases and deviations from ideal gas laws; liquid, macroscopic properties of liquids, evaporation, vapour pressure and its variation with temperature, boiling point, heat of vaporization, Clausius-Clapeyron equation, freezing point, melting point and phase diagrams of simple systems; solids types of solids and their properties, ionic solids and lattice energy, crystalline solids. Chemical Energetic: definition of some thermodynamic terms, heat, work, internal energy, enthalpy, pressure-volume work. Relationship between internal energy and enthalpy. First law of thermodynamics and its applications. Chemical Kinetics: rate of reaction, factors affecting reaction, order of reaction and how to determine it for zero order and first order reaction, rate of equation and temperature, reaction mechanisms and rate equation for simple reactions. Chemical Equilibrium: reversible reactions and chemical equilibrium, equilibrium constant, factors affecting equilibrium. Le Chateliers Principle. Effect of temperature on equilibrium constant. Relationship between equilibrium constant and standard Gibbs Free Energy, ΔG° . ionic equilibrium. Electrochemistry: types of conductors, classification of compounds, electrolysis, Faradays laws of electrolysis. Application of electrolysis. Introduction to electrochemical cells.