General Chemistry (1)

Course Code	Course Num.	Course Name	Credit Hours	Lec.	Lab.	Tut.	Prerequisites
CHM	101	General Chemistry (1)	4	2	2	2	

Objectives:

- Recognize atoms, molecules and ions, atomic theory, structure of the atom, isotopes, chemical formulas, naming compounds, stoichiometry, Avogadro's number, mass spectrometer, empirical formulas, chemical equations, limiting reagents and changes taking place.
- Describe chemical reactions in aqueous solutions and their general proprieties.
- Recall types of chemical reactions (precipitation, acid-base, oxidation-reduction).
- Solve ideal gas equation, stoichiometric data, partial pressures and the kinetic molecular theory of gases,
- Identify quantum theory, electronic structure, Bohr's theory, dual nature of electron, quantum mechanics, electron configuration, periodic classification periodic variation in physical properties, ionization energy, electron affinity.

Syllabus

The Study of Change: Science for the twenty-first century, the study of chemistry, the scientific method and hypothesis, a law and theory, matter and substance, mixture, physical means, elements and compounds, classification of matter, The three state of matter, Types of changes, Accuracy and precision.

Atomic, molecule & ions: The atomic theory, the structure of the atom, Atomic number, Masse number and Isotopes, the periodic table, Molecules and ions, Chemical formulas, Naming compounds.

Masse Relationships in chemical reactions: Atomic mass, Avogadro's number and molar mass, Molecular mass, chemical reaction and chemical equations, Amounts of reaction and reactants and products, Limiting reagents.

Reaction in aqueous solutions: General proprieties of aqueous solutions, Acid-Base reactions, Concentration solutions, Gravimetric Analysis, Acid Base Titrations.

Gases: Substance that exist as Gases, Pressure of a Gas; The Gas Laws, The ideal gas equation, Gas

Quantum Theory and the Electronic Structure of Atoms: Properties of waves, Line emission spectrum, Schrodinger Wave Equation, Quantum numbers, Atomic Orbitals, Aufbau principle, Hund's rule, Electron Configuration.

The Periodic Table: Development of the periodic table, ground state electron configurations of the elements, classification of the elements, effective nuclear charge, atomic radii, ionization energy and electron affinity.

Textbook:

Chemistry, Raymond CHANG, Mc Graw Hill, 10th Education, ISBN 978–0–07–351109–2

References:

1. ***Chemistry***, 7th Edition; Steven S. Zumdahl, Susan A. Zumdahl, Houghton Mifflin. J. A. Beran, 2006.
2. ***Chemistry: Principles and Reactions***; 5th Edition, William L. Masterton, Cecile N. Hurley, Hardcover: 756 pages, Publisher: Brooks Cole, 2003.