

Course Content:

1. Introduction and Review

Scientific method, measurement, Gas Laws, Kinetic Theory, Intermolecular forces and Solids, Deviation from ideal gas behaviour, Stoichiometry, gas laws, kinetic molecular theory of gases, real gases.

2. Atomic Structure

Atomic structure, Atomic number, Atomic mass, Isotopes, Ionization energy, atomic size, electron configuration, Periodic table, Trends in periodic table.

3. Bonding and Molecular Structure

Atomic bonding: covalent bonding, Lewis structures, electronegativity, polarity, resonance, shapes of molecules, Valence Bond Theory, hybridization, orbital diagrams, Molecular Orbital Theory, shapes and energies of molecular orbitals, bond order, intermolecular forces, and hydrogen bonding.

4. Coordination Compounds

Bonding and structure, isomerism, Crystal field theory, Colour and magnetic properties, Spectrochemical series, Nomenclature, Applications of coordination compounds.

5. Organic Chemistry

Nomenclature, Bonding, Physical properties, Chemical reactions, Mechanisms, Stereoisomerism, Reaction kinetics, Environmental chemistry, Polymers, Biomolecules, Carbohydrates, Amino acids and esters, polymerization.

6. Nuclear Chemistry (Optional topic)

Radioactivity, Radioisotopes, Nuclear reactions, Nuclear fission and fusion, Applications of nuclear chemistry, Environmental chemistry, Radioactivity, Radioisotopes, Nuclear fission and fusion, Applications of nuclear chemistry.

Laboratory Content:

1. Lecture Material (70%)

During the semester (30%)

Work will be done during the first half of the semester

At the discretion of the instructor on assignments

Final exam covering the entire text (30%)

Any final other following evaluation

class participation is considered a part of your total

laboratory (30%)

Hand graded and graded. These reports will be handed in

on report

Complete reports will be handed in. In the laboratory notebook or short reports to be handed in

reports (30%)