

Faculty of Engineering & Technology

M.Sc. in Polymer Science and Technology

ORGANIC CHEMISTRY :

Structure Bonding, Mechanism of Organic reactions, Alkanes, Alkenes, Dienes and Alkynes, Cycloalkanes, Cycloalkenes, Arenes and Aromaticity, Alkyl and Aryl halides, Stereochemistry of Organic Compounds.

Alcohols, Phenols, Ethers, Epoxides, Aldehydes, Ketones and Active methylene Compounds, Carboxylic Acids and derivatives, Compounds of Nitrogen, Organometallic Compounds, Organosulphur compounds, Heterocyclic Compounds, Carbohydrates, Amino Acids, Peptides, Proteins and Nucleic Acids, Fats, Oils and Detergents, Synthetic Polymers, Synthetic Dyes, Polynuclear aromatic hydrocarbon, Introduction to Spectroscopy, UV, IR, HNMR Mass.

PHYSICAL CHEMISTRY :

Gaseous State, Liquid State, Solid State, Colloidal State, Solutions, Chemical Kinetics and Catalysis.

Thermodynamics, Chemical Equilibrium, Phase Equilibrium, Electrochemistry, Quantum Mechanics, Rotational, Vibrational and Electronic Spectroscopy, Photochemistry, Physical Properties and Molecular Structure.

INORGANIC CHEMISTRY :

Atomic Structure, Periodic Properties, Chemical Bonding – Covalent Bond, Ionic Solids, Weak Interactions, Comparative study of s and p block of elements, diborane, oxides and oxyacids of Phosphorous, Interhalogen Compounds.

Chemistry of Elements of First Transition Series, Chemistry of Elements of Second and Third Transition Series, Coordination Compounds, Chemistry of Lanthanide Elements, Chemistry of Actinides, Acids and Bases, Hard and Soft Acids and Bases (HSAB), Chemistry of Noble Gases, Non aqueous Solvents.

Metal – ligand Bonding in Transition Metal Complexes, Valence Bond and Crystal field Theories Magnetic Properties of Transition Metal Complexes, Electron Spectra of Transition Metal Complexes, basics of Organometallic Chemistry, Bioinorganic Chemistry, Silicones and Phosphazenes.

ANALYTICAL CHEMISTRY :

Introduction to Analytical Chemistry, Error and Treatment of Analytical Data : Separation techniques, Solvent Extraction, distillation, chromatography HPLC, GC, Size Exclusion, Ion-Exchange : UV-vis & IR spectrophotometry, Acid Base Equilibria, Precipitation and Complexometric Titrations.

ENVIRONMENTAL CHEMISTRY :

Introduction to Environment and Atmosphere, Hydrosphere, Soils, Industrial Pollution : Reasons & Removal, Environmental Toxicology.

COMPUTER FOR CHEMISTS :

Introduction to Computer and Computing, Introduction to Software and Mathematical concepts, Computer Programming (BASIC or C). Numerical Methods of Analysis, Programming in Chemistry.