Postgraduate Department of Chemistry

B.Sc. Chemistry

Programme Outcomes

PO1	Read, understand and interpret chemical information – verbal, mathematical and graphical.
PO2	Impart skills required to gather information from resources and use them.
PO3	To give need based education in chemistry of the highest quality at the undergraduate level.
PO4	Perform experiments and interpret the results of observation.
PO5	Provide an intellectually stimulating environment to develop skills and enthusiasm of students to the best of their potential.
PO6	Use Information Communication Technology to gather knowledge at will.
PO7	To bridge the gap between plus two and post graduate levels of Chemistry by providing a more complete and logical framework in almost all areas of basic Chemistry.

Program Specific Outcomes

PSO1	Learn Chemistry through lectures, laboratory sessions, tutorials and interaction with eminent academicians.
PSO2	Develop laboratory skills for qualitative and quantitative analysis, organic synthesis, distillation, filtration, crystallization and chromatography.
PSO3	Safe working procedures, chemical toxicology, environmental concerns, handling of chemicals, glassware and range of instruments available at graduation level.
PSO4	Kindle the urge for higher studies, entrepreneurship and lifelong learning.

Course Outcomes

SEMESTER I

CH1CRT01 – GENERAL AND ANALYTICAL CHEMISTRY

CO-1 To understand the methodology of chemistry

CO-2 To familiarise the periodic properties and periodic table

CO-3 To get concrete knowledge on analytical chemistry

CO-4 To get acquaintance with chromatographic techniques

CO-5 To evaluate analytical data

SEMESTER II

CH2CRT02 – THEORETICAL AND INORGANIC CHEMISTRY

CO-1 Develop a deep knowledge on atomic structure

CO-2 To understand various theories of chemical bonding

CO-3 Get concrete knowledge on s-block, p-block, d-block and f-block elements

CH2CRP01 - VOLUMETRIC ANALYSIS

CO-1 Get practice with acidimetry, alkalimetry, complexometry and redox titrations

CO-2 Able to apply the volumetric knowledge in commercial samples.

SEMESTER III

CH3CRT03- ORGANIC CHEMISTRY I

CO-1 Understanding the fundamentals of organic chemistry and organic reactions CO-2 Identifying the rules related to IUPAC nomenclature

CO-3 Appreciating the beauty of stereochemistry of organic molecules in terms of various conformations and their stability

CO-4 Understanding the various reactions involved in the synthesis of aliphatic and aromatic hydrocarbons

CO-5 Familiarising the basics of pericyclic reactions with examples

SEMESTER IV

CH4CRT04- ORGANIC CHEMISTRY II

CO-1 Understand the various functional organic compounds and their synthesis

CO-2 Familiarise the fundamental difference in chemical and physical properties of different functional groups

CO-3 Able to distinguish between organic compounds using various organic reactions

CO-4 Learn rearrangement reactions with their detailed mechanisms

CH4CRP02 - QUALITATIVE ORGANIC ANALYSIS

CO-1 Systematically analyse organic compound and preparation of solid derivative

CO-2 To determine the physical constants of solids and liquids – melting and boiling points

CO-3 To understand the reactions of various functional groups

SEMESTER V

CH5CRT05-ENVIRONMENT, ECOLOGY AND HUMAN RIGHTS

CO-1 To understand the fragility and sensitivity of our environment and the importance of its protection.

CO-2 To promote environmental awareness

CO-3 To foster a sense of responsibility and proactive citizenship

CH5CRT06- ORGANIC CHEMISTRY –III

CO -1 To give concrete idea about nitrogen containing compounds and their synthesis.

CO- 2 To familiarize with the vast world of heterocyclic compounds

CO- 3 To provide a brief idea about active methylene compounds and drugs.

CO -4 To get acquainted with carbohydrates, polymers and dyes.

CH5CRT07 – PHYSICAL CHEMISTRY - I

CO-1 Behaviour of ideal gases and the real gases. A deeper look on the distribution of velocities and energies among the molecules, an overview on the collision properties.

CO-2 To develop a qualitative idea about the intermolecular forces in liquid, to know in detail about viscosity and surface tension and its determination

CO-3 A review on the nature of solid state, different crystal systems, analysis of cubic crystals, to have a deep idea on the different types of ionic compounds and to know in detail about the liquid crystals.

CO-4 Describes the interfacial phenomenon of adsorption, explains different types of adsorption and its significance, enumerate the nature of colloidal state, its preparation and properties.

CH5CRT08- PHYSICAL CHEMISTRY-II

CO-1 Gaining a strong foundation in Quantum chemistry

CO- 2 Developing a scientific aptitude to link experiment with theory

CO -3 Familiarisation with fundamentals of various spectroscopic techniques

CO- 4 To equip the learner with basic skills in analysing and interpreting spectrum

CO -5 Understand the basic principles of NMR and ESR spectroscopy

OPEN COURSE: CH5OPT01- CHEMISTRY IN EVERYDAY LIFE

CO-1 To understand the basic concepts of Food Additives, Soaps, Detergents and Cosmetics.

CO-2 To familiarize about Plastics, Paper, Dyes and Drugs.

CO-3 To Learn about Nanomaterials and the interdependence between Chemistry and Agriculture

SEMESTER VI

CH6CRT09-INORGANIC CHEMISTRY

CO-1 To learn in detail about the concepts and applications of coordination Chemistry.

CO-2 To understand the basic concepts of Organometalic Chemistry.

CO-3 To familiarize about Bioinorganic Chemistry.

CO-4 To get brief idea of Boron compounds, Interhalogen and Noble gas Compounds

CH6CRT10- ORGANIC CHEMISTRY – IV

CO -1 To introduce students to the world of natural products, lipids, vitamins, steroids and hormones.

CO -2 To familiarize the concepts of amino acids, peptides, proteins, enzymes and nucleic acids

CO -3 To provide an elementary idea about supramolecular chemistry.

CO -4 To get acquainted with organic photochemistry.

CO- 5 To equip the students to interpret spectra of organic molecules using various spectroscopic tools like UV, IR, NMR and Mass.

CH6CRT11-PHYSICAL CHEMISTRY –III

CO-1 To learn in detail about the concepts and applications of thermodynamics.

CO-2 To understand the basic concepts of Chemical, Ionic and Phase Equilibria

CO-3 To get brief idea of Chemical Kinetics

CH6CRT12- PHYSICAL CHEMISTRY -IV

CO- 1 Develop a critical knowledge of various binary solutions and their distillation behaviour.

CO -2 To get acquainted with Nernst distribution law and it's applications

CO -3 To impart a foundation on the concept of chemical potential

CO- 4 Developing scientific temper by gaining an understanding of electrical conductance and electrochemical cells

CO -5 To get introduced to the laws of photochemistry

CO -6 Classifying various molecules into point groups based on grouptheory

CH6CBT02- NANOCHEMISTRY AND NANOTECHNOLOGY

CO1- Introduction to the world of Nano chemistry. The fundamental concepts and historical evolution of nanotechnology will make the students more creative and enthusiastic.

CO2- The various microscopic techniques for the characterization of nanomaterials will fascinate the students and motivate them to go to the deep of Nano world.

CO3- Electrical and optical properties of nanomaterials are also incorporated which will develop curiosity and increase the scientific temper.

CO4- The students will be highly motivated when they study the different applications of nanotechnology.

CH6CRP03- QUALITATIVE INORGANIC ANALYSIS

CO- 1 To introduce the systematic way of analyzing inorganic mixtures using semi micro method.

CO- 2 To study the reactions of various radicals with a view to identify and confirm them, from a mixture of two acid and two basic radicals.

CH6CRP04-ORGANIC PREPARATIONS AND LABORATORY TECHNIQUES

CO-1 To master basic laboratory techniques like crystallization, distillation, solvent extraction...

CO-2 To perform different types of Organic Preparations

CO-3 To separate a component from a mixture of compounds using TLC and column Chromatography

CH6CRP05- PHYSICAL CHEMISTRY PRACTICALS

CO -1 Gain an ability to determine the viscosity of a solution.

CO -2 To know about the concept of heat of neutralisation

CO- 3 To apply knowledge on colligative properties

CO- 4 To find out the concentration of a solution using conductometric and potentiometric titrations

CO- 5 To get well acquainted with using spreadsheet program

CH6CRP06- GRAVIMETRIC ANALYSIS

CO -1 To provide a fundamental idea regarding the application of gravimetry as a tool for quantitative estimation.

COMPLEMENTARY COURSE

SEMESTER I

CH1CMT01 - BASIC THEORETICAL AND ANALYTICAL CHEMISTRY

CO-1 To have a basic knowledge about the atomic structure and chemical bonding

CO-2 To study the fundamental concepts of chemistry including periodic properties and chemical and ionic equilibrium

CO-3 To develop a deep knowledge about the analytical techniques involved in the laboratory.

CO-4 To understand different types of chromatographic techniques and the principle behind chromatography

SEMESTER II

CH2CMT02 - BASIC ORGANIC CHEMISTRY

CO-1 To study the fundamental concepts of organic chemistry

CO-2 To have deep knowledge about the organic reaction mechanisms

CO-3 To understand about the stereoisomerism and stereochemistry of organic compounds CO-4 To know in detail about the natural and synthetic polymers, environmental hazards of polymer revolution and recycling of plastics

CH2CMPO1- VOLUMETRIC ANALYSIS

CO1- Enabling students to manage neutralization titrations- acidimetry and alkalimetry.

CO2-. Enabling students to manage oxidation reduction (Redox) titrations like permanganometry, dichrometry, iodimetry and iodometry.

SEMESTER III

CH3CMT03- PHYSICAL CHEMISTRY – I

CO-1 To enable the students to get a clear idea about the molecular structure

CO-2 To make students capable of understanding and studying electrical and nuclear properties of molecules

SEMESTER IV

CH4CMT05- PHYSICAL CHEMISTRY – II

CO- 1 To promote understanding of the basic facts and concepts in spectroscopy and to develop interest in students to study the structure and properties of matter.

CO-2 To help the students to get a basic idea about spectroscopy

CO-3 To enable the students to study the rules governing chemical reactions and factors influencing them.

CH4CMP02- PHYSICAL CHEMISTRY PRACTICALS

CO-1 To determine viscosity, CST, Transition temperature etc

CO-2 To find the heat of neutralization, kinetics of a reaction

CO-3 To estimate the mass of ion or compound using conductometric and potentiometric titrations