Programme Specific outcome of M.Sc. Chemistry

PSO 1 Learning of analysis of soil, water, cement, soap and detergent, oil and fats, Allopathic and Ayurvedic drugs, Polymers, Alloys and minerals etc. samples using ISI methods

PSO 2 Theoretical and Practical knowledge of conventional and modern electroanalytical methods of analysis.

PSO 3 Knowledge of concept of Chemistry in Vedic literature.

PSO 4 Knowledge of application of computers in chemistry

PSO 5 Interaction of students with industries/ institutions and to develop research skills

Course outcome of M.Sc. Chemistry

M.Sc. Pt.-I / Semester-I

Core-1: General Inorganic Chemistry

CO 1: Coordination chemistry. Electronic spectra of complexes, Knowledge of Magnetochemistry. Molecular symmetry. Basic concepts of Bio-inorganic chemistry Oxygen Carriers

Core-2: General Organic Chemistry

CO 2: Organic Reaction, Mechanism.Reaction, Intermediates, Reagents in organic synthesis, Heterocyclic Compounds, Pericyclic reactions, Photochemical reactions, Stereoisomerism, Stereochemistry

Core-3:General Physical Chemistry

CO 3: Third order reactions, Theories of reaction rates, 3-d Potential energy surface diagrams, Col, Contour diagrams, Complex reactions, salt effect and solvent effect in Reactions, Linear Free Energy Relationships, Catalysis and Photochemistry, Macromolecules

Elective: Computer Application in Chemistry

CO 4 : The computers, number system, operating systems, The programming languages especially C- Language, The applications of computers in chemistry, Working/operation of modern software based instruments.

Lab Course: 1

CO 5 : **A. Inorganic Chemistry:**

(a) Analysis of inorganic mixture for 08 ions including 04 cations. Special emphasis may be given on dry tests and spot tests (including rare earths).

(b) Preparation of the inorganic complexes and determination of their composition by volumetric and Gravimetric techniques.

(c) Gravimetric analysis of two metal ions given in a mixture

B. Organic Chemistry:

(i) Separation of organic mixture and identification, confirmation by derivative preparation as far as possible.

(ii) Two step preparations of the organic compounds involving the reactions oxidation, reduction, hydrolysis, nitration.

(iii) Estimation of Phenolic group in Phenol and Amino group in Aniline (Volumetrically).Estimation of Carboxylic group and Glucose.

(iv)Estimation of N,S and Halogens.

Lab Course: 2

CO 6 **: A. Physical Chemistry:** Experiments related to following techniques :

(1) Cryoscopy (2) Ebullioscopy (3) Phase rule (4) Distribution Law
(5) Adsorption (6) Chemical Kinetics (7) Thermochemistry

B. Computer Applications: Handling of computer with MS Word and Power point presentation. Internet and its application in Chemistry. Simple programming in C and C-programs related to computer applications in Chemistry.

M.Sc. Pt.-I / Semester-II

Core- 1: Inorganic Chemistry and Related Techniques of Analysis

CO 7 : *Interaction of radiation with matter, Raman Spectroscopy, Atomic absorption spectroscopy, Atomic emission spectroscopy, Nephelometry and Turbidimetry, Thermal Analytical methods,*
Inductively Coupled Plasma technique

Core-2: Organic Chemistry and Related Techniques of Analysis

CO 8 : *UV-VIS Spectroscopy, IR spectroscopy, NMR spectroscopy, Mass spectrometry, XRD, SEM, TEM*

Core- 3:Physical Chemistry and Related Techniques of Analysis

CO 9 : *Treatment of Data in Quantitative Analysis, Signal, Noise, Sensitivity Detection Limits, FT, Polarisation, Overvoltage, Basic Polarography, Ion Exchange, Conductometric, Potentiometric and pH–metric Titrations, Solvent Extraction, Chromatographic Techniques*

Elective: Chemistry in Vedic Literature and Ayurvedic Drugs

CO 10 *: Chemistry in vedic literature and Indian philosophy, Metallic Medicines in Ayurveda, Pharmacodynamics of Ayurvedic drugs, Classification and Constituents of Crude Drugs, Plant Analysis, Analysis of Ayurvedic and Modern drugs*

Lab Course: 1

CO 11: Experiments involving the extensive handling of apparatuses and equipments related to following techniques: Polarimetry, Refractometry, Spectrophotometry, Turbidimetry/ Nephelometry, D.O. analyser, Column chromatography, Paper chromatography, Thin layer chromatography, Gas-Liquid chromatography, Flamephotometry.

Lab Course: 2

CO 12 : A. Experiments related to pH metry, Conductometry, Potentiometry & Polarography

Electrophoresis, Fluorimetry and Interferrometry.

B. The experiments related to the analysis of Ayurvedic and Allopathic Drugs.

M.Sc. Pt.-II / Semester-III

Core-1:Analysis of Water and Waste Water

CO 13 : Sampling, storage andPhysico-chemical analysis of water samples, Bacteriological Examination of Water, Polarography (D.C., A.C. and pulse), stripping and cyclic Voltametry with particular reference to analysis of water and waste water, Water Pollution, Effluent treatment and Water quality standard parameters

Core- 2:Analysis of Soils

CO14 : Phases Present in the soi, Inorganic and organic portion of the Soil, Soil Sampling and storage, Physical and Chemical analysis of soils, Exchangeable Hydrogen, Lime and Gypsum requirement, Interpretation of soil test data for crops

Core-3: Analysis of Oils, Fats, Soaps, Detergents, Essential oils, Paints and Varnishes

CO 15 : General idea of Oils, Fats, Soaps and detergents, Analysis of Oils, Fats, Soaps and detergents, Essential oils, Paints, Varnishes and Lacquers

Elective: Analysis of Cement, Minerals, Alloys, Trace Metals and Polymers

CO 16 : Analysis of Limestone, Dolomite and Talcum powder, Cement and its analysis, Analysis of Steels and Alloys, Trace metal analysis by colorimetry and spectrophotometry, Synthesis of polymers

Lab Course: 1

CO 17 : A. Analysis of water and waste water. **B.** Analysis of soils.

Lab Course: 2

CO 18 : *A. Analysis of Oils and Fats, Soaps and Detergents.*

B. Analysis of Cement, Minerals, Alloys.

C. Experiments related to Polymers:

Synthesis of polymers: bulk polymerization of styrene, precipitation polymerization

of acrylonitrile, emulsion polymerization of styrene, suspension polymerization of methyl methacrylate, polycondensation of ethylene glycol with maleic acid.

Determination of viscosity, pH, electrolytic stability, Hardness, tensile strength, percentage elongation of polymers

M.Sc. Pt.-II / Semester-IV

Project/ Dissertation/ Assignment

CO 19 : Interaction of students with industries/ institutions and to develop research skills