Rajiv Gandhi Mahavidyalaya, Mudkhed
Department of Chemistry

1. Program Outcomes (PO's):

After completion of syllabus, the students will be able to understand following outcomes.

PO1: The students will be able to learn basic concept of organic chemistry, Nomenclature.

PO2**:** The students get well acquainted with functional group in organic chemistry.

PO3: To know about term cycloalkane, cycloalkene and diene, name reaction, rearrangement, amino acids.

PO4: The students will be able to known about some exceptional electronic configuration, trends and Periodicity in the following properties like atomic size, ionization energy, electron affinity & electronegativity, metal carbonyls, coordination chemistry.

PO5: To understand the inert gases forms compounds, different fluoride compounds of xenon, electrochemistry, chemical kinetics, Learning surface phenomena at heterogeneous surfaces.

PO6: Learning and understanding rules of logarithm, Rules of drawing graph, Derivatives, Integration, different mathematical concept and SI units, and their use in solving numerical.

PO7: To impart knowledge of atomic structure, different theories of atomic structure, rules of electronic configuration and quantum numbers.

PO8: Learning the properties of liquid phase as surface tension, Viscosity and paracor & understanding of catalysis, types of catalysis and characteristics of catalyzed reactions.

PO9: Learning the Concept of hybridization and study of VSEPR & Molecular Orbital theory.

PO10: Have the knowledge about the spectroscopic methods (UV, IR, PMR) and elucidate the chemical structure on the basis of spectroscopic data.

PO11: To impart the knowledge about electrophilic substitution, nucleophilic substitution, oxidation, reduction reaction, synthetic reagents and its application.

2. Program Specific Outcomes (PSO's):

POS1: The knowledge about the fundamentals, principles, mathematical concepts and have understanding in recent developments in the subject area.

POS2: Have a basic concept, nomenclature, functional groups, Naming Reaction, Stereochemistry, hydrocarbons, aromaticity, and fundamental term & all spectroscopy in organic chemistry.

POS3: The students are also enabling to known about thermodynamics, chemical kinetics, electrochemistry, electronic spectra, solution, phase equilibria.

POS4: The knowledge about the properties of element, Metal Cluster, Coordination chemistry, metal carbonyls metal in medicines will be applicable in research.

POS5: The practical course is in relevance to the theory courses to improve the understanding of concepts in chemistry.

POS7: Acquires the ability to synthesise, separate and characterize compounds using laboratory and instrumentation techniques

POS8: Develop practical skill and problem-solving skill during course program

3. Course Outcomes (CO's):

Semester- I, Paper-I, Organic + Inorganic Chemistry:

After completion of syllabus the students will be able to understand following outcomes.

CO1: The students should learn basic concept of organic chemistry, Nomenclature.

CO2: The students get well acquainted with functional group in organic chemistry.

CO3: Learn and practice about organic compounds with their names.

CO4: The Students learn some exceptional electronic configuration, trends and Periodicity in the following properties like atomic size, ionization energy, electron affinity & electronegativity.

CO5: To understand the inert gases forms compounds, different fluoride compounds of xenon.

Semester- I, Paper-II, Physical + Inorganic Chemistry:

CO1: Learning and understanding rules of logarithm, Rules of drawing graph, Derivatives, Integration, different mathematical concept and SI units, and their use in solving numerical.

CO2: Learning surface phenomena at heterogeneous surfaces.

CO3: The Students will learn the basic knowledge of gas phase, Kinetic molecular theory, critical phenomenon, liquefaction and molecular velocities.

CO4: To impart knowledge about solid phase, crystallography and some crystal structure.

CO5: General characteristics of s-block elements, oxides, hydroxide, carbonate & its complexes 6. Study the oxidation and reduction by different methods

Semester- II, Paper-III, Organic + Inorganic Chemistry:

CO1: The students should learn the concept of aromatic hydrocarbons, Aromaticity and antiaromaticity.

CO2: The students should understand the phenols and synthesis of phenols

CO3: The students knows about the haloalkene and haloarenes compounds.

CO4: To know the concepts of carboxylic acids and their derivatives and Acid Base concepts.

CO5: To know about the types of alcohols and reaction of epoxide.

CO6: To study the different properties of P- block elements.

Semester- II, Paper-IV, Physical + Inorganic Chemistry:

CO1: To impart knowledge of atomic structure, different theories of atomic structure, rules of electronic configuration and quantum numbers.

CO2: Learning of properties of liquid phase as surface tension, Viscosity and parachor.

CO3: The Students will learn the basic knowledge of colloidal state, types, preparation, properties and applications of colloidal state.

CO4: Learning and understanding of catalysis, types of catalysis and characteristics of catalyzed reactions.

CO5: Learning the Concept of hybridization and study of VSEPR & Molecular Orbital theory.

Semester- III, Paper-VI, Organic + Inorganic Chemistry:

CO1: The students should learn the mechanism of nucleophilic addition reaction, oxidation & reduction reaction.

CO2: know the preparation and chemical reaction of carboxylic acid and benzene sulphonic acid.

CO3: Understand the preparation and chemical reaction of Organo magnesium, Organo Lithium & Organo zinc compounds.

CO4: learn about Oil, Soap & detergent.

CO5: know about theories of qualitative analysis and the physical parameter of non-aqueous solvent.

Semester- III, Paper-VII, Physical + Inorganic Chemistry:

CO1: Learn the photoelectric effect, Compton effect, De-Broglie equation, Heisenberg uncertainty principle, Schrodinger equation.

CO2: know the laws of thermodynamic, Joules law & Carnot cycle.

CO3: To understand the concept of Entropy and its numerical problems.

CO4: Learn term phase Equilibrium, one & two component system.

CO5: learn the term related Nuclear chemistry and theories of gravimetric analysis.

Semester- IV, Paper- VIII, Organic + Inorganic Chemistry:

CO1: The students get well acquainted with term Stereochemistry, types of isomerism, chiral centre, enantiomers and diastereomers.

CO2: The students should learn the basic concepts in carbohydrate and related process.

CO3: Learn about the chemical reaction of compounds containing nitrogen atom.

CO4: Understand the preparation and synthetic application of osmium tetraoxide, Ozone, BF_3.

CO5: Learn the general characteristic, compound containing d-block element and properties and application to Lanthanide, Actinide series.

Semester- IV, Paper-IX, Physical + Inorganic Chemistry:
CO1: The students learn the zero, first and pseudo order reaction, collision and numerical of chemical kinetics.
CO2: Learn conductance, electrolytic cell and numerical problem from electrochemistry. Kolkohlrausch law, Degree of dissociation, weak & strong electrolyte.
CO3: To know about photochemistry, Joblonski diagram, term involved in photochemistry.
CO4: learn about the silicates, zeolites, carbides and fullerene.
CO5: learn the basic concepts of chemistry of halogen compounds.

Semester- V, Paper- XII, Organic + Inorganic Chemistry:
CO1: Learn the mechanism of Electrophilic Substitution reaction of Heterocyclic Compounds
CO2: Know the characteristics, Classification and synthesis of Drugs and Dyes.
CO3: Explaining theories of Color and chemical constitution of Dyes.
CO4: Gathering basic knowledge of Alkaloids, Vitamins and Pesticides
CO5: Understand the basic principle and application of coordination complexes CO6 Know the application of elements in medicine.

Semester- V, Paper-XIII, Physical + Inorganic Chemistry:
CO1: Understand the concepts of molecular Spectroscopy and its applications.
CO2: Analyze Rotational, Vibrational and Raman, Spectra.
CO3: Interpret the theoretical and experimental methods of chemical kinetics.
CO4: Know the theory and application of Distribution law.
CO5: Explain the Nomenclature, classification and application of Organometallic Compounds.

Semester- VI, Paper-XIV, Organic + Inorganic Chemistry:
CO1: To learn the basic principle and terms used in UV, IR & NMR Spectroscopy.
CO2: Acquire the fundamental knowledge of classification and Synthesis of Amino Acid and Peptides.
CO3: Describe the types of Rearrangement.
CO4: Postulates and limitations of VBT and CFT.
CO5: Calculation of CFSE for Tetrahedral and Octahedral Complexes 6. Explain the types of electronic transition and selection rule.
CO6: Apply spectroscopic techniques in analyzing the structure of simple organic Molecules

Semester- VI, Paper-XV, Physical + Inorganic Chemistry:
CO1: Basic concepts of electrochemistry and its applications.
CO2: Understanding the Nernst heat theorem and the Thermodynamics open system.
CO3: Know the Vant-Hoff's Reaction Osochore and numerical on it.
CO4: Explain the types of magnetic substances and effect of temperature on it .
CO5: Biological role of alkali & alkaline earth metal ions & structures and functions of Metal cluster.