Government of Maharashtra

Rajaram College, Kolhapur

Department of Chemistry

Program Outcomes (Pos) Program Specific Outcomes (PSOs) and Course Outcomes (Cos)

Program Outcomes (Pos)

1. To promote understanding of basic facts and concepts in Chemistry while retaining theexcitement of Chemistry
2. To make students capable of studying Chemistry in academic and Industrial courses and to expose the students to different processes used in Industries and their applications.
3. To expose the students to various emerging new areas of Chemistry and apprise them with their prevalent in their future studies and their applications in various spheres ofchemical sciences.
4. To develop problem solving skills in students.
5. To developed ability and to acquire the knowledge of terms, facts, concepts, processes,techniques and principles of subjects.
6. Studying Chemistry in academic and Industrial courses.
7. Understand nanotechnology and applications of nanomaterials.
8. Know various spectroscopic techniques such as UV IR, NMR and Mass spectroscopy
9. Understand the structure of organic compounds with the help of provided spectral data
10. Acquaint new areas of Chemistry and their applications in various spheres.

Program Specific Outcomes (PSOs)

PSO 1 Work in the chemical industry.

PSO 2 Carry out research work in various fields.

PSO 3 Work in Support services such as lab technicians, stock room managers, safety officers etc.

PSO 4 Work as assistant for doctors, dentists, veterinarians etc.

Course Outcomes (Cos)

Class- B.Sc- I, Semester- I, Paper I (Inorganic Chemistry)	
CO-1	Understand Bohr's theory of hydrogen structure, electronic configuration and various properties of elements
CO-2	Understand formation of ionic bond.
CO-3	Gain knowledge of chemical bond.
CO-4	Understand MOT through LCAO principles. Gain Knowledge of Formation of Molecules on the Basis of MOT

Class- B.Sc- I, Semester- I, Paper II (Organic Chemistry)	
CO-1	Understand Concept in Streochemistry such as R and S configuration, E- Z Configuration
CO-2	Understand Aromaticity through Huckel's Rule.
CO-3	Gain knowledge reaction intermediates such as carbocation, carbanion, carbine and free radicals
CO-4	Gain knowledge about Cycloalkanes and their configurations

Class- B.Sc- I, Semester- II, Paper III (Physical Chemistry)	
CO-1	Understand basic concepts of thermodynamics and thermos-chemistry.
CO-2	Understand kinetic theory of gases, deviation of real gases from ideal behavior, causes of deviation and Van der Waals equation of state for real gases.
CO-3	Gain the knowledge about physical properties of liquids such as Surface tension, Viscocity, refractive index etc.
CO-4	Understand basic concepts of chemical kinetics.

Class- B.Sc- I, Semester- II, Paper IV(Analytical Chemistry)	
CO-1	Understand basic principle of chromatography and methodology, applications of Paper and Thin Layer chromatography.
CO-2	Learn the theory of titrimetric Analysis and theory of use of indicators
CO-3	Understand physical and chemical analysis of water, learn basic programming constructs.
CO-4	Gain the knowledge about Fertilizers and its estimation methods

Class- B.Sc. Part-II Sem.:III Paper V (Physical Chemistry)	
CO-1	Understand all the terms related to conductance, Kohlrausch's law and numerical problems.
CO-2	To understand Theories of reaction rate in Chemical Kinetics & concept of entropy.
CO-3	To Understand the terms surface index, refractive index and numerical problems.
CO-4	Understand second order and third order chemical kinetics through various examples

Class- B.Sc. Part-II Sem.:III Paper VI Industrial Chemistry	
CO-1	Understand various methods of analysis in statistics.
CO-2	To Understand the knowledge of some unit operations.
CO-3	Understand the process of corrosion and its prevention.
CO-4	To get knowledge about Soap and Detergents and cleansing action of soap.

Class- B.Sc. Part-II Sem.: IV Paper VII Inorganic Chemistry	
CO-1	Understand basic concepts about coordination complexes
CO-2	To get the knowledge about Chelation and its application in analyical chemistry.
CO-3	Understand the properties of 4d and p block elements.
CO-4	To learn the basic knowledge about the qualitative analysis of inorganic Compounds.

Class- B.Sc. Part -II Sem.: IV Paper VIII Organic Chemistry	
CO-1	To impart knowledge about the synthesis, reactivity and applications of carboxylic acids.
CO-2	To get knowledge about classification, and applications of arnines &diazonium salts.
CO-3	Understand the classification & structure of carbohydrates.
CO-4	To learn the basic knowledge conformational analysis of organic Compounds.

Class- B.Sc. Part-III Sem.:V Paper X Inorganic Chemistry	
CO-1	Study role of acids and bases in Chemistry.
CO-2	Understand geometry, stability and nature of bonding between metal ion and ligand in complexes.
CO-3	Understand synthesis and the applications of the semiconductors and Superconductors in electrical and electronic devices.
CO-4	Gain knowledge about Crystal field theory and its applications

Class- B.Sc. Part –III Sem.:V Paper XI Organic Chemistry	
CO-1	Understand chromophore, auxochrome and calculation of lambda max.
CO-2	Develop the knowledge of vibrational transitions and regions of IR spectrum.
CO-3	Understand magnetic-nonmagnetic nuclei, shielding-deshielding, chemical shift, splitting pattern.
CO-4	Gain knowledge about the basics and applications of NMR and Mass spectroscopy

Class- B.Sc. Part –III Sem.V Paper IX Physical Chemistry	
CO-1	Understand basic concept of Quantum Mechanics.
CO-2	Know types of electromagnetic radiations, rotational and vibrational spectra of diatomic molecules.
CO-3	Learn photochemical laws, reactions and various photochemical phenomena.
CO-4	Gain knowledge about solutions, miscibility and their diagrams. Learn the concept of Electromotive Force

Class- B.Sc. Part-III Sem.: V Paper XII Analytical Chemistry	
CO-1	Learn the techniques of gravimetric analysis.
CO-2	Understand working and applications of optical methods as an analytical tool.
CO-3	Understanding theory and applications of potentiometric titrations
CO-4	Understanding the basics of ion exchange and column adsorption chromatography and quality control practices in industrial laboratories.

Class- B.Sc. Part –III Sem.: VI Paper XIV Inorganic Chemistry	
CO-1	Understand the thermodynamic and kinetic aspects of metal complexes.
CO-2	Write Nomenclature of trans-uranic elements.
CO-3	Understand techniques which involve in ore dressing and extraction of cast iron from its ore.
CO-4	Gain the knowledge about classification, types, mechanism and applications of catalyst in industrial fields.

Class- B.Sc Part –III Sem.: VI Paper XV Organic Chemistry	
CO-1	Gain knowledge of reagents used in organic transformations and various reactions used in organic synthesis.
CO-2	Knowing basic terms used in retrosynthetic analysis and concept of retrosysnthesis.
CO-3	Learn addition reactions across carbon carbon double bond w.r.t hydrohalogenation, ozonolysis and other reactions
CO-4	Gain knowledge about trpenoids and alkaloids wrt occurrence,isolation, characteristics and classification

Class- B.Sc. Part –III Sem.: VI Paper XIII Physical Chemistry	
CO-1	Learn quantum Chemistry, Heisenberg's uncertainty Principle, concept of energy operators.
CO-2	Learn Schrodinger wave equation. Physical interpretation of theWavefunctions.
CO-3	Understand different spectroscopy.
Co-4	Learn and understand phase rule. Learning of one component, two component and three component system phase diagrams with suitable examples.

Class- B.Sc. Part –III Sem.: VI Paper XVI Industrial Chemistry	
CO-1	Learning the whole processs of manufacture of sugar and byproducts of sugar industry
CO-2	Understanding physic-chemical principles of production of ammonia, sulfuric acid, nitric acid and sodium carbonate with its manufacturing plant
CO-3	Gaining the knowledge of classification, synthesis and applications of various polymers
CO-4	Learn nanotechnology including classification, optical properties, synthesis routes, Characterization techniques and applications.