Department of Chemistry
Course Outcomes (COs)

Class	Course	*After completion of these courses students will be able to;*
B.Sc.I Sem. I	**Physical Chemistry. (P-I)**	**1.** Describe concept of distribution law, thermodynamics, chemical kinetics, gaseous state and nuclear chemistry. 2. Identify order and molecularity of a chemical reaction. 3. Explain the velocity and productivity of reactions. 4. Explain the advantages and disadvantages of nuclear reactions theoretically.
	Inorganic Chemistry (P-II)	1. Explain the ionic solid and their crystal structure. 2. Describe the nature, applications of element of p block elements. 3. Analyze separations of metals from mixture. 4. Distinguish between acids and bases their applications in day to day life. 5. Acquire basic knowledge about noble gases and their uses and properties.
B.Sc.I Sem. II	**Organic Chemistry (P-III)**	1. Demonstrate knowledge and understanding of concept of stereochemistry. 2. Discuss the optically active or inactive compounds. 3. Write fundamentals of organic reactions and mechanisms. 4. Explain d role of reagents in organic synthesis. 5. Distinguish between aromatic and non aromatic compounds.
	Industrial Chemistry (P-IV)	1. Discuss the Scope and basic concept of industrial chemistry. 2. Explain the cause of pollutions and their control measures. 3. Demonstrate applications of some important methods of industrial processes. 4. Express creativity in Petrochemical industry. 5. Elaborate importance of fertilizers, methods of analysis of fertilizers.

B.Sc. II Sem.III	**Organic Chemistry (P-V)**	1. Classify Polynuclear hydrocarbons. 2. Discuss stereo chemical aspect with respect to the stereo specific and stereo selective reactions with their mechanism. 3. Describe the importance of stereochemistry in the processes of industries. 4. Study the importance of heterocyclic compounds and their classifications. 5. Explain the concepts and need of green chemistry.
	Analytical Chemistry (P-VI)	1. Explain the concept of analytical chemistry. 2. Differentiate iorganic qualitative and quantitative methods of analysis. 3. Explain basics of titrations methods. 4. Describe details of principles and theory behind Gravimetric analysis. 5. Interpret methods of analysis of fertilizer.
B.Sc. II Sem.IV	**Physical Chemistry (P-VII)**	1. Describe principles and methodology of Electrochemistry. 2. Explain physical properties of liquids. 3. Critically interpret electrochemical processes and instrumentations.
	Inorganic Chemistry (P-VIII)	1. Describe chemistry of elements of 1st row transition series. 2. Explain the periodic properties, methods of separation of f - block elements (Lanthanides). 3. Elucidate coordination compounds and their applications. 4. Understand the concept and applicability of non aqueous solvents. 5. Get acquaints with chelation and applications in day today life. 6. Demonstrate & understand catalysis and their importance in synthetic chemistry.

B.Sc.III Sem.V	**Physical Chemistry (P-IX)**	1. Describe the concepts and applications of quantum mechanics. 2. Explain theoretical and practical concepts of spectroscopy. 3. Explains photochemistry, photochemical reactions and their applicability in day today life. 4. Analyze definition and scope solutions. 5. Describe electromotive force and construction of various types of electrochemical cells.
	Inorganic Chemistry (P-X)	1. Interpret Hard and Soft acids and Bases (HSAB). 2. Study metal ligand bonding in transition meatal complexes and their applications in industrial word. 3. Describe classification and methods of polymer preparations and their recycle procedures. 4. Analyze the different aspects of Organometallic chemistry. 5. Differentiate the concept of metal semiconductor and superconductor and its uses.
	Organic Chemistry (P-XI)	1. Describe the physical methods of analysis organic compounds. 2. Discuss the data analysis and deductions of the structure of unknown organic compounds. 3. Explain the importance of spectroscopy in the manufacturing processes of industries. It has wide applications in Research and developments section of various industries. 4. Describe importance data analysis and the confirmation of structure of unknown organic compounds. 5. Analyze the concept and need of spectroscopy in chemical industry.

	Industrial Chemistry (P-XII)	1. Explain the concept of Industrial chemistry. 2. Explain the processes of manufacturing of heavy chemical processes and their applications. 3. Interpret basics of corrosion and passivity. 4. Interpret processes involved in sugar industry. 5. Explore about soaps and detergents manufacturing process and mechanism.
B.Sc.III Sem - VI	**Physical Chemistry (P-XIII)**	1. Describe the concepts and applications of phase rule. 2. Explain the term solid state chemistry and synthetic methods. 3. Evaluate surface chemistry.
	Inorganic Chemistry (P-XIV)	1. Explain and write inorganic reaction mechanism. 2. Evaluate thermodynamic and chemical kinetic aspects of metal complexes. 3. Examine iron and steel and their production technique. 4. Describe role of elements, porphyrin compounds and functions related to bioinorganic chemistry.
	Organic Chemistry (P-XV)	1. Write mechanism of name reactions. 2. Explain the term reagents and their synthetic applications. 3. Demonstrate knowledge about electrophilic addition reactions and their applicability in day today life. 4. Comprehend the definition and scope of Natural Products. 5. Evaluate pharmaceutical products, synthesis methods and their uses.

Prof. Dr. N. D. Patil Mahavidyalaya ★ Malkapur ★

PRINCIPAL
Prof. Dr. N. D. Patil Mahavidyalaya
Malkapur, Dist. Kolhapur