

# K. N. Bhise Arts and Commerce College, Kurduwadi

## Department of Chemistry

### Programme Outcomes

Sr. No.	Programme	Programme Objectives	Programme Specific Outcomes
1	B. Sc. Chemistry	<b>PO1. Scientific attitude:</b> To develop our thinking, our attitude, our interests, our outlook have undergone tremendous changes.	<b>PSO1.</b> Understand the knowledge of chemistry, Chemistry majors are able to recognize and apply the principles of atomic and molecular structure to predict chemical properties and chemical reactivity.
		<b>PO2. Effective Communication:</b> Speak, read, write and listen clearly in person through electronic media in English and in one Indian language and make meaning of the word by connecting peoples, ideas, books, media and technology	<b>PSO2.</b> Chemistry majors are able to employ critical thinking and scientific enquiry in the performance, design, interpretation and documentation of laboratory experiments, at a level suitable to succeed at an entry level position in a chemical industry or a chemistry graduate programme.
		<b>PO3. Laboratory and calculation skills:</b> Demonstrate competency in the laboratory expected of a practicing chemist. Develop good skills in laboratory such as observation and evaluation.	<b>PSO3.</b> Upon completion of a chemistry degree, chemistry majors are able to interpret and analyze quantitative data.
		<b>PO4. Integrate the big ideas and themes:</b> Structure representation, energetics, rates of processes, Connect neutral network across courses.	<b>PSO4.</b> The students are able to understand theoretical concepts of instruments that are commonly used in most chemistry fields as well as interpret and use data generated in instrumental chemical analyses.
		<b>PO5. Effective use of ICT:</b> Use of ICT tools to communicate, create, disseminate, store and manage information.	<b>PSO5.</b> Application of chemical knowledge to explain observation and solve the problem.

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#### Course Outcomes

Sr. No.	Course	Course Outcomes	
1.	B. Sc.- I Sem- I	<b>Paper-I</b> Physical Chemistry	<ol style="list-style-type: none"> <li>1. To study the basic concepts order and molecularity of reaction.</li> <li>2. To understand the methods to determine the order of reaction.</li> <li>3. To study the basic concepts of graphical representation, Derivative and Integration.</li> <li>4. To introduce the processes, laws of thermodynamics.</li> <li>5. Explanation of ideal, non ideal and liquification of gases.</li> </ol>
		<b>Paper-II</b> Inorganic Chemistry	<ol style="list-style-type: none"> <li>1. To understand the atomic structure, shape of orbital, position of elements in periodic table, electronic configuration and characteristics.</li> <li>2. Introduction of chemical bonding, types of bond and crystal structure of NaCl &amp; CsCl, Unit cell.</li> <li>3. To study the VBT, understand concept of hybridization.</li> <li>4. To study the MOT, understand the concept of orbital's.</li> <li>5. VSEPR Theory- assumption and application.</li> </ol>
2.	B. Sc.- I Sem- II	<b>Paper-III</b> Organic Chemistry	<ol style="list-style-type: none"> <li>1. Fundamentals of organic chemistry- bond energy, bond angle, bond length, types of arrow, types of reactions.</li> <li>2. To understand the Structure and Bonding in organic compounds.</li> <li>3. To introduce the term isomerism, nomenclature.</li> <li>4. To identify Aromatic, Non-aromatic and Anti-aromatic compounds by using Huckels rule.</li> <li>5. To study the alkenes, dienes and alkynes.</li> </ol>
		<b>Paper-IV</b> Analytical Chemistry	<ol style="list-style-type: none"> <li>1. To introduce physical properties of liquids.</li> <li>2. Introduction of environmental chemistry and different treatments on water.</li> <li>3. To study qualitative and quantitative analysis. detection of Carbon, Hydrogen, Nitrogen And Halogen in different organic compounds by qualitative and quantitative measurements.</li> <li>4. To study the petrochemical-.composition of petrochemicals, application of petrochemicals.</li> </ol>
3.	B. Sc.- I	<b>Practical</b>	<ol style="list-style-type: none"> <li>1. To introduce the basic concepts of Physical, Inorganic and Organic chemistry practicals.</li> <li>2. To provide practical information to students about titration, preparation and estimations.</li> <li>3. To expose students to handle the glassware, instruments and apparatus.</li> <li>4. To improve the practical knowledge of the students</li> </ol>
4.	B. Sc.- II Sem- III	<b>Paper-V</b> Organic Chemistry	<ol style="list-style-type: none"> <li>1. To introduce the UV-Visible spectroscopy.</li> <li>2. To study the conformation, configuration and isomerism.</li> <li>3. Brief idea about name reactions with mechanism.</li> <li>4. To study of alcohols, phenols, aldehydes, ketones, ethers, epoxides and carboxylic acids.</li> <li>5. To introduce various dye i.e. Methyl orange, Congo-red.</li> </ol>
			<ol style="list-style-type: none"> <li>1. To study the co-ordination chemistry-to understand the</li> </ol>

		<b>Paper-VI</b> Inorganic Chemistry	Ligand, co-ordination number, Werners theory. 2. To introduce chelation, structure of DMG and EDTA. 3.To introduce acid & bases and different concepts. 4. To study of d-block elements- position, electronic configuration and characteristics of d-block elements.
5.	B. Sc.- II Sem- IV	<b>Paper-VII</b> Physical Chemistry	1. The study of Resistance and Conductance. 2. Knowledge of transport number, kohlrauschs law and its applications, Onsagar equation. 3. Describe the term Entropy, second law and third law of thermodynamics. 4. To study the cell, lattices, crystal structure. 5. Introduction of distribution law.
		<b>Paper-VIII</b> Analytical Chemistry	1. To introduce volumetric analysis-understand term of titrant, titrand, mole concept, primary &second standard substance.To study acid base indicators &acid base theory. 2.To introduce gravimetic analysis-understand the general steps dilution , precipitation, digestion, ignition in gravimetric analysis. To understand theco-precipitation & post precipitation .
6.	B. Sc.-II	<b>Practical</b>	1. To synthesis, estimation and analysis of unknown organic compounds. 2. To prepare, and estimate gravimetrically inorganic compounds. 3. To detect the unknown acidic and basic radicals. 4. To perform the experiments by instrumentally and non-instrumentally. 5. To study conductivity, refractivity, viscosity, specific rotation practically.
7.	B. Sc.- III Sem- V	<b>Paper-IX</b> Physical Chemistry	1. To understand Phase rule, phase diagram, one component and two component systems. 2.To acquire a knowledge of Thermodynamics, types of electrodes, metal- metal ion electrode. 3. explain the Oxidation- Reduction electrodes, reversible and irreversible cell and applications of emf. 4. Explain the thermal and photochemical processes, Laws of photochemistry and Joblonski diagram.
		<b>Paper-X</b> Inorganic Chemistry	1.To understand the basic concept, factors, applications and limitations of CFT. 2. Describe the basic concepts, assumptions, examples, applications and limitations of MOT. 3. To understand the nuclear reaction and its types, applications radioisotopes. 4. To study the essential, non essential and trace elements in biological process. 5. To describe the basic concepts of polymers, and nanoparticles.
		<b>Paper-XI</b> Organic Chemistry	1. Brief idea about Spectroscopy i.e. IR, NMR, Mass. 2.To introduce Shielding and Deshielding, Chemical Shift. 3. To describe various conformations- chair, boat, half-chair, twist-boat etc. 4. To understand the name reactions with mechanism. 5. To synthesis and reactions of AAE and Malonic ester.
			1. To provide basic information of colorimetry. 2. to study the titrations by potentiometrically.

		<b>Paper-XII</b> Analytical Chemistry	3. Explain the electrolysis and electroplating. 4. Discuss the Flame photometry and titrations by conductometrically.
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8.	B. Sc.- III Sem- VI	<b>Paper-XIII</b> Physical Chemistry	1. To introduce the Rotational and Vibrational spectroscopy of diatomic molecules. 2. To study the basic ideas about different solutions. 3. Explain the terms- free energy, enthalpy, phase equilibria, law of mass action, fugacity and activity. 4. Describe effects on rate of reactions, theories and order of reactions.
		<b>Paper-XIV</b> Inorganic Chemistry	1. To study the Lanthanides and Actinides with IUPAC nomenclature of super heavy elements. 2. To understand the theories of bonding in metal, Types of Semiconductor, applications of Semiconductor and Superconductor. 3. Recognise the structural studies of Boranes, Xenon compounds and oxides of sulphur and Phosphorus. 4. To study the corrosion of metals and Passivity. 5. To introduce Organometallic chemistry.
		<b>Paper-XV</b> Organic Chemistry	1. To study the Five membered, Six membered and Condensed heterocycles. 2. Brief idea about the monosaccharide, disaccharide and polysaccharide. 3. To understand the concept Dyes of Drugs. 4. To understand the analytical evidences and synthesis of Vitamins and Hormones. 5. To study the pesticides and plant growth.
		<b>Paper-XVI</b> Analytical Chemistry	1. To introduce soap and detergents. 2. Describe the process of polymerisation and rubber. 3. To explain the manufacture, refining of sugars and their by- products. 4. To study the Sizing, Bleaching and Dyeing of fibres. 5. To study the basic of Green Chemistry and Chromatography.
9.	B. Sc.- III	<b>Practical</b>	1. Apply quantitative reasoning skills to determine quantities of matter and energy involved in physical and chemical change. 2. Analyse and interpret experimental data using instruments. 3. To synthesize and Estimate Inorganic compounds. 4. To synthesize and estimate Organic compounds. 5. Separation and analysis of binary organic mixtures. 6. Preparation of derivatives of Organic compounds.