!! न हि ज्ञानेन सदृशं ! पवित्रमिह विद्यते !!

Shriram Shikshan Sanstha's

Shriram Mahila Vidnyan Mahavidyalaya, Paniv

Tals.: Malshiras, Dist.: Solapur, 413113

(Affiliated to S. N. D. T. Women's University, Mumbai)

Department of Chemistry

Course outcome (COs)

Name of program	Course title	Course outcome
B. Sc. I. General Chemistry (Sem.-I)	**Chemistry P-I** (Inorganic Chemistry)	After successful completion of course a Student should be able to ➢ Understand atomic structure, modern periodic table and periodic properties of elements. ➢ Understand the concept of chemical bonding ➢ Learn chemistry of s and p block elements
	Chemistry P-II (Organic Chemistry)	➢ Lerner can know about IUPAC names of any organic compounds. ➢ Know structure and bonding of compounds of carbon. ➢ Gain basic knowledge of stereochemistry of organic molecules. ➢ Learn chemistry of alkenes, alkynes, alkadienes, cycloalkanes, alkyl halides, Grignard's Reagent, Alcohols, ethers, carbonyl compounds, carboxylic acids and amines.
	Lab Course:	After successful completion of course a Student should be able to ➢ Understand Inorganic volumetric analysis and Qualitative Analysis:
B. Sc. I. General Chemistry (Sem.-II)	**Chemistry-I (Physical Chemistry)**	After successful completion of course a Student should be able to ➢ Learn mathematical concepts required for understanding physical chemistry. ➢ Understand concepts behind solid, liquid and gaseous states of matter. ➢ Understand colloids, macromolecules and concepts behind catalysis and its applications.
		After successful completion of course a Student should be able to

	Chemistry-II (Inorganic Chemistry)	➢ Understand Comparative study of elements Gr. 13-17 elements ➢ Learn trends in periodic properties, allotropy,Inert pair effect. ➢ Understand Chemical properties of the noble gases, chemistry of Xenon , structure and bonding inXenon compounds. ➢ Understand Solubility product and common ion effect. Use of borax, cobalt nitrate, sodium carbonate, hydrogen sulphide, ammonium chloride and yellow ammonium sulphide. ➢ Understand Detection of following acid radicals in presence of each other: CO_3^{-2} and SO_3^{-2} , NO_2^- andNO_3^-, Cl^-, Br- and I^-
	Lab Course:	After successful completion of course a Student should be able to ➢ Understand Physical Chemistry Viscometer ➢ Learn about Taglamometer ➢ Understand Semi Micro Qualitative Analysis.
B. Sc. II. (Sem. -III)	**General Chemistry-I (Organic Chemistry)**	After successful completion of course a Student should be able to ➢ Learn study preparations, reactions and mechanisms ➢ Understand properties, acidic and basic Nature, of Alcohols, Phenols, Aldehydes, ketones and carboxylic acid. ➢ Understand study properties, acidic and basic Nature, of Organic compound of Nitrogen and their synthesis.
	General Chemistry-II (Physical Chemistry)	After successful completion of course a Student should be able to ➢ Understand Thermodynamic ➢ First law of thermodynamics ➢ Learn Calculation of W, q, du and dH ➢ Hess's law of heat Summation andits application.
	Lab Course:	After successful completion of course a Student should be able to ➢ Understand Organic Chemistry: Organic Derivatives Preparation, crystallization and physical constant ➢ Understand Physical Chemistry to determine the equilibrium constant for the reaction.

B. Sc. II. (Sem.-IV)	**General Chemistry-I (Physical Chemistry)**	After successful completion of course a Student should be able to ➢ Understand Second law of ➢ Learn Concept of Entropy ➢ Learn Gibbs and Helmholtz Function: Gibbs Function (G) and Helmholtz Function ➢ Understand Thermodynamic Quantities.
	General Chemistry-II (Inorganic Chemistry)	After successful completion of course a Student should be able to ➢ Understand Condition for the formation of molecular orbitals ➢ Understand linear Combination of atomic orbitals methods to obtain molecular orbitals. ➢ Understand Chemistry of transition element(3d). ➢ Understand IUPAC nomenclature ➢ Learn about Stereoisomerism ➢ Understand treatment of precipitates in gravimetry ➢ Understand different classification of Acid and Bases
	Lab Course:	After successful completion of course a Student should be able to ➢ Understand gravitation Estimation of Barium gravimetrically as Barium-Sulphate. ➢ Understand estimation of Ferrous gravimetrically as Fe2O3 ➢ Understand estimation of Zinc gravimetrically as Zinc Pyrophosphate (ZnP2O7). ➢ Understand estimation of Barium gravimetrically as Ba-Chromate (BaCrO4) ➢ Understand estimation of Nickel gravimetrically as Ni-DMG ➢ Understand Physical Chemistry to determine normality and strength.
	General Chemistry-I	After successful completion of course a Student should be able to ➢ Understand elementary quantum mechanics. ➢ Learn about quantum numbers

B. Sc. III. (Sem.-V)	**(Physical chemistry)**	➢ Understand Photochemistry ➢ Understand qualitative description of fluorescence, phosphor fluorescence, non-radioactive process, quantum yield, photosynthesized reaction. ➢ Understand spectroscopy ➢ Undrerstand physical properties and molecular
	General Chemistry-II (Oragnic Chemistry)	After successful completion of course a Student should be able to ➢ Understand details about Synthetic dyes and drugs ➢ Understand organomaganesium compound ➢ Understand Fats, Oils And Detergents
	General Chemistry-III (Inorganic Chemistry)	After successful completion of course a Student should be able to ➢ Understand Solid state chemistry ➢ Understand superconductivity ➢ Understand chemistry of actinides, uranium and plutonium, applications. ➢ Understand Organometallic chemistry
	General Chemistry-IV (Analytical Chemistry)	After successful completion of course a Student should be able to ➢ Understand qualitative and quantitative analysis ➢ Understand UV -visible Spectroscopy and Absorption spectroscopy ➢ Understand Beer's, Lambert's law and Lambert's Beer's law. ➢ Understand titrimetric method ➢ Understand Conductmetric titration and potentiometric titration. ➢ Understand Method of separation.
	Lab	After successful completion of course a Student should be able to ➢ Understand determine the energy of activation for the acid catalyzed hydrolysis of methyl acetate

	Course:	➢ Determine the strength of given strong acid (HCl) By potentiometric ➢ Understand investigate the kinetics of iodination of acetone ➢ Understand Binary mixture ➢ Understand inorganic Chemistry complex metric titration ➢ Understand Estimation of Hardness of water sample ➢ Understand to verify Lambert-Beers Law using Methyl Orange.
B. Sc. III. (Sem.-VI)	**General Chemistry-I (Physical Chemistry)**	After successful completion of course a Student should be able to ➢ Understand colligative properties of dilute ➢ Understand osmotic pressure Vant'Hoff eq. for osmotic pressure, ➢ Understand nuclear chemistry ➢ Understand secondary cells lithium ion cell. Fuel Cells, Solar cell and biomass energy. ➢ Understand Hydrogen : fuel of the future, production of hydrogen and advantage. ➢ Understand Suraface chemistry: Types of Adsorption, Langumir's adsorption isotherm. B. E. T. eq.
	General Chemistry-II (Organic Chemistry)	After successful completion of course a Student should be able to ➢ Understand Heterocyclic compound ➢ Learn Electrophilic substitution ➢ Understand carbohydrates ➢ Understand Synthetic polymere ➢ Understand Specrtoscopy and infrared spectroscopy.
	General Chemistry-III (Inorganic Chemistry)	After successful completion of course a Student should be able to ➢ Understand metal ligand bonding in TM complex ➢ Understand electronics spectra of TM complex ➢ Understand thermodynamics and kinetic stability of complexes.

		➢ Understand Bioinorganic Chemistry ➢ Understand Catalysis by transition metals complexes
	General Chemistry-IV (Analytical chemistry)	After successful completion of course a Student should be able to ➢ Understand optical methods ➢ Understand Methods of separation ➢ Understand Miscellaneous Concept of quality, quality control, quality assurance, ISO series, good laboratory practices. ➢ Understand Turbidimetry and Nephelometry
	Lab Course:	After successful completion of course a Student should be able to ➢ Understand to determine the amount of Fe present in the given solution using salicylic acid by colorimetric titration. ➢ Understand to determine the order of reaction between K25208 and KI by fractional change method. ➢ Understand to determine empirical formula of Ferric-5-sulphosalicylate. ➢ Understand determine the amount of Fe2+ in the given solution potentiometrically. ➢ Understand to determine the refractive indices of series of salt solutions and to find out concentration of the salt in given unknown solution. ➢ Understand estimation of nitro group by reduction. ➢ Understand to prepare tetramine Copper(II) sulphate, bis (ethylene diamine) Copper (II) sulphate tris (ethylenediamine) Nickel(II) thiosulphate. Tris (acetylacetonato) Iron(III). Bis (8-hydroxy quinolinato) Magnesium (II). ➢ Understand estimation of Saline from Dextrose Saline by Mohr's Method.