

COURSE OUTCOME (CO)**B. Sc. (GENERAL) IN PURE SCIENCE****SUBJECT: CHEMISTRY**

Semester	Paper code & Name	Outcomes
I	DSC1AT – Inorganic Chemistry	<ul style="list-style-type: none">• Understand the atomic structure and its development.• Understand the concept of wave function and explain the quantum numbers and its significance.• Explain the fundamental concepts of ionic bond and covalent bond and VBT, VSEPR theory• To acquire idea about lattice energy, Born Haber Cycle, Fajans rule, dipole moment etc.• To know the M.O concept of both homo and hetero nuclear molecules., from that students can acquired the knowledge of magnetic properties of molecules.
	DSC1AT- Organic Chemistry	<ul style="list-style-type: none">• Understand stability of organic molecules, structure & stereochemistry.• Identify the aromatic, anti- aromatic and non-aromatic compound aromaticity and non-aromatic compounds.• Identify electrophile, nucleophiles, free radicals and intermediates along the reaction pathways.• Preparation and properties of aliphatic hydrocarbon.
	DSC1AP	<ul style="list-style-type: none">• Estimate oxalic acid by titrating with KMnO_4.• Estimate iron (II) ions by titrating with $\text{K}_2\text{Cr}_2\text{O}_7$ solution.• Estimate Cu (II) ion iodometrically using $\text{Na}_2\text{S}_2\text{O}_3$.• Detect special element (N,S, X=Halogen).
II	DSC1BT – Physical Chemistry	<ul style="list-style-type: none">• Understand the concept of heat, work, and laws of thermodynamics and different thermodynamic properties.• Understand the concept of ionic equilibrium and Chemical equilibrium.
	DSC1BT- Organic Chemistry	<ul style="list-style-type: none">• Students will learn preparation and properties of aromatic hydro carbon, alkyl halide and aryl halide, alcohols, phenols and ether.• Students can acquire the concept of aliphatic and aromatic aldehydes and ketones.
	DSC1BP	<ul style="list-style-type: none">• Determination enthalpy of neutralization of hydrochloric acid with sodium hydroxide.• Determine enthalpy of ionization of acetic acid.• Measurement of p^{H} of different solutions using p^{H} meter.• Purification of organic compounds and determination of melting and boiling point.• Benzoylation of amines and phenols.

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III	DSC1CT – Physical Chemistry	<ul style="list-style-type: none"> Learn thermodynamic view on dilute solution and colligative properties. Understand phase rule and phase diagram of different system Understand the concept of ionic equilibrium Learn about different types of electrodes, galvanic cells and application of emf measurement.
	DSC1CT- Organic Chemistry	<ul style="list-style-type: none"> Learn about carboxylic acids and their derivatives. Understand amines and diazonium salts. Learn different types of amino acids, peptides and proteins. Understand general properties and classifications of carbohydrates.
	DSC1CP	<ul style="list-style-type: none"> Determine systematic qualitative analysis of some organic compounds possessing mono functional group. Perform conductometric titration strong acid vs. strong base and weak acid vs. strong base. Determine the cell constant. Construct phase diagram of binary system.
	SEC1 (T+P) (Basic Analytical Chemistry)	<ul style="list-style-type: none"> Make scientific reports from chemical experiments and draw conclusions Formulate the important factors on analytical experiments and results Understand the theoretical principles of various separation techniques in chromatography. Test the metal present in a tablet by Spectrophotometric method Investigate the acidity and alkalinity of a water sample by pH measurement.
IV	DSC1DT – Inorganic Chemistry	<ul style="list-style-type: none"> Learn the basic concept and theory in coordination chemistry Know about complex formation, stability and nature of metal ligand bonding on coordination chemistry. Learn about CFT and VBT of transition element and their magnetic properties and structure of the complex.

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IV	DSC1DT – Physical Chemistry	<ul style="list-style-type: none"> Understand the kinetic model of gas and its properties. Understand the behaviour of real gas. Know the concepts of chemical kinetics in different chemical processes.
	DSC1DP	<ul style="list-style-type: none"> Determine acid and basic radicals present in a salt sample by semi-micro method. Estimate total hardness of water by complexometric titration. Estimate the amount of nickel present in given solution as NiDMG complex. Determine surface tension of liquid using stalagmometer and viscosity measurement by Ostwald viscometer. Learn about kinetics of some chemical reactions.
	SEC2 (T+P) - Analytical Clinical Biochemistry	<ul style="list-style-type: none"> Learn about the structure, properties and function of carbohydrates, lipids and proteins. Learn about diagnostic approach by blood and urine analysis. Identification and estimation of carbohydrates qualitative and quantitative. Determine saponification number of oil.
V	DSE1AT – Polymer Chemistry	<ul style="list-style-type: none"> Learn about polymer materials. Will learn functionality and its importance and kinetics of polymerization Learn about crystallization of polymer. Students acquired the knowledge of Polymer and its structure. Learn about Glass transition temperature (T_g) and determination of T_g
	DSE1AP	<ul style="list-style-type: none"> Prepare nylon 66 and nylon 6. Synthesis of methyl acrylate and acrylic acid. Preparation of urea formaldehyde resin. Determination of molecular weight of polymer.
	SEC3 (T+P) (Pharmaceutical Chemistry)	<ul style="list-style-type: none"> Learn about drug analysis and synthesis. Know the various green techniques for drug synthesis Understand the pharmaceutical chemistry Knowledge about antibiotic drugs. Design the preparation of drug and its analysis Demonstrate the drug preparation procedure. Prepare aspirin and its analysis Prepare antacid.

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VI	DSE2T-Industrial Chemistry and Environment	<ul style="list-style-type: none"> • Learn about large scale production of various gases and their uses. • Understand storage and hazards in handling of different gases and inorganic materials. • Students will learn about metal extraction and purification of specific metals. • Learn about environment and its segments. • Understand Biogeochemical cycle of carbon, nitrogen and sulphur. • Learn about prevention of air pollution and water pollution. • Understand different source of energy and will aware the most important nuclear pollution. • Learn about the importance of the Green Chemistry and Chemical Industry.
	DSE2P	<ul style="list-style-type: none"> • Determine COD and BOD. • Determine Percentage of available chlorine in bleaching powder. • Students will prepare Borax and Boric acid.
	SEC4- Fuel Chemistry	<ul style="list-style-type: none"> • Know about different types of coal and its byproducts • Judge the quality of fuel • Acquire knowledge about oil refinery and petroleum industry • Acquire knowledge about different types of lubricants