

PROGRAM OUTCOMES

B.Sc with Chemistry Major (4 years)

- ❖ Acquire a thorough knowledge and understanding of chemical reactions.
- ❖ Facilitating opportunities for employment across both government and non-government sectors.
- ❖ Enhancing laboratory and experimental skills, including the creation of innovative chemical experiments and methodologies.
- ❖ Developing analytical aptitude, understanding fundamental questions in chemistry, and gaining familiarity with modern chemical processes.
- ❖ Develop proficiency in computer programming and data analysis using excel.
- ❖ Gain an elementary idea about reactions and processes in a green and sustainable manner.
- ❖ Gaining knowledge of the synthesis and chemical mechanisms of modern drugs.
- ❖ Development of Entrepreneurial Skills.
- ❖ Encouraging a worldwide and multidisciplinary understanding of Chemistry and its applications by combining insights from Biology, Physics, and Environmental science.
- ❖ Students will develop the confidence to prepare and defend a scientific presentation in their individual capacity.

CHEMISTRY COURSE OUTCOMES (Cos)(NEP)

Semester	Course Code	Course Outcome
I	DSCC1 (Th)	Students will be acquainted with the fundamental concept of atomic structure, periodic properties (CO-1) . they will learn the basic concept of various bonding theory, physical properties and aromaticity and basic concept of stereochemistry (CO-2) . the students will learn about the fundamentals of energy conservation and their transformation in thermodynamic systems. they will learn to apply rate laws and determine rate constants through experiments (CO-3) .
	DSCC1 (Pr)	Students will aquire basic laboratory skill, handling and calibration of different apparatus (CO-1) . preparation of primary and secondary standard solution. they learn about basic analytical techniques involving acid-base and redox titrations (CO-2) quantitative estimation of carbonate,bicarbonate and iron by titrimetric methods (CO-3)
	SEC1(Th)	Students will be aquinted with quantitative analysis like accuracy, presicion, selectivity etc and about the basic laboratory practices (CO-1) they are introduced to acid-base, redox and precipitation titrimetry (CO-2) . they learn to analyse water samples, and determine bod,cod etc (CO-3) .
	SEC Pr/Tu	Students will learn about safety practices in laboratory (CO-1) . handling, cleaning , drying and calibration of glass apparatus like pipette and burettes (CO-2) . callibration and handling of tools and techniques like spectrophotometer, conductometry,ph metry and chromatography (CO-3) .
II	DSCC-2(Th)	Students acquire an understanding of the kinetic theory of gases and the limitations of the theory in case of real gases. they learn to apply real gas equations of state like van der waals equation to predict the behaviour of real gases (CO-1) they can analyze and solve problems related to gas laws, kinetic theory and real gas equations (CO-2) students will be able to analyse and predict the mechanisms of various organic reactions with characterization of the intermediates involved (CO-

CHEMISTRY COURSE OUTCOMES (Cos)(NEP)

		3). they will be able to design and propose synthetic routes for complex organic molecules taking into account the mechanism, use of functional group, choice of solvents, catalyst, temperature and stereochemical outcome of reactions(CO-4) they get an understanding of the formation and properties of ionic and covalent bonds,apply theoretical principles to predict the reactivity and properties of ions and molecules (CO-5) they are introduced to the fundamental principles of qualitative analysis, including solubility, precipitation, and complexation reactions. (CO-6)
	DSCC-2(Pr)	They learn to identify the constituents of a mixture using various analytical methods such as precipitation, filtration and complexation. (CO-1)
	Sec-2	They are introduced to the basic understanding of AI(CO-1). learn to identify and explain various applications of ai in industries and daily life (CO-2). they learn to analyze the ethical and social implications of and are exposed to the emerging trends, future directions and potential challenges in ai development and adoption (CO-3).
III	DSCC-3(Th)	Students will come to know the advanced concept of thermodynamics and its application to understand the concepts of chemical equilibrium (CO-1). learn the concept of conductance and its measurement (CO-2) analyze the relation between conductance and ionic equilibrium (CO-3)
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	DSCC-4(Th)	Students will learn to identify the different types of aromatic substitution reactions viz. electrophilic and nucleophilic , explain the mechanisms (CO-1) use directing effects, steric effects and electronic effects to predict the major reaction product (CO-2) compare elimination and substitution reactions, including their conditions, mechanisms and outcome (CO-3) understand the

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		stereochemical implications of substitution and elimination reactions including formation of stereoisomers (CO-4) predict the reactivity and regioselectivity of addition reactions to alkenes and alkynes, based on structure of reactant and nature of reagent (CO-5)
	DSCC 4(Pr)	They will learn to identify pure unknown organic compound, both solid and liquid (CO-1) characterize compounds by determining physical properties such as melting point, boiling point. prepare appropriate derivatives of the compound and characterize them (CO-2) .
	SEC(Th)/Tu	Apply numerical methods to solve problems in chemistry including root finding, linear regression, interpolation, numerical differentiation and integration (CO-1) perform linear regression analysis to analyze experimental data and determine best fit line and its slope and intercept (CO-2) evaluate and interpret the results of numerical calculations , including estimation of errors and precision (CO-3)
	IDC	Learn the chemical composition, processing and preservation of dairy products. students will be able to identify the role of food additives and detect and analyse adulterants and contaminants in common food items (CO-1) apply the chemistry knowledge to assess the safety and quality of food products (CO-2) students will gain a deeper understanding of the chemistry underlying everyday food products, enabling them to make informed decisions about food intake and raise public awareness regarding the same (CO-3) students will gain a comprehensive understanding of polymers, their applications, environmental implications of plastic waste enabling them to contribute to sustainable solutions in various fields. also they will learn about primary and secondary batteries and fuel cells as future energy sources (CO-4)