College Code : 7631

ಎಸ್.ಈ.ಎ. ವಿಜ್ಞಾನ ವಾಣಿಜ್ಯ ಮತ್ತು ಕಲಾ ಕಾಲೇಜು

(ಬೆಂಗಳೂರು ಉತ್ತರ ವಿಶ್ವವಿದ್ಯಾಲಯದಿಂದ ಸಂಯೋಜನೆಗೊಂಡಿದೆ ಹಾಗೂ ಕರ್ನಾಟಕ ಸರ್ಕಾರದಿಂದ ಮಾನ್ಯತೆ ಪಡೆದಿದೆ)

S.E.A COLLEGE OF SCIENCE, COMMERCE & ARTS

(Affiliated to Bengaluru North University, and Recognized by Govt. of Karnataka)

NAAC Accredited with 'B' Grade

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Department of chemistry

Program outcomes, Program Specific outcomes and course outcomes (NEP)

Programme Outcomes (PO)	***PO 1*:** To create enthusiasm among students for Analytical chemistry and its application in various fields of life. ***PO 2*:** To provide students with broad and balanced knowledge and understanding of key concepts in Analyticalchemistry ***PO 3*:** To develop in students a range of practical skills so thatthey can understand and assess risks and work safely measures to be followed in the laboratory. ***PO 4*:** To develop in students the ability to apply standard methodology to the solution of problems in chemistry ***PO 5*:** To provide students with knowledge and skill towards employment or higher education in chemistry or multi-disciplinary areas involving chemistry. ***PO 6*:** To provide students with the ability to plan and carry out experiments independently and assess the significance of outcomes and to cater to the demands of chemical Industries of well-trained graduates ***PO 7*:** To develop in students the ability to adapt and apply methodology to the solution of unfamiliar types of problems. ***PO 8*:** To instil critical awareness of advances at the forefrontof chemical sciences, to prepare students effectively for professional employment or research degrees in chemical sciences and to develop an independent and responsible work ethics.

PROGRAMME SPECIFIC OUTCOMES(PSO)	***PSO 1:*** To gain knowledge of the fundamental concepts of chemistry and applied chemistry through theory and practical. ***PSO 2:*** To possess minimum standards of communication skills to read and understand documents so that they can solve their problems very methodically, independently and with logical argument. Graduates are expected to build good communication skill so that they can easily share their idea/finding/concepts to others. ***PSO 3:*** to achieve critical thinking ability to design, carry out, record and analyze the results of chemical reactions. ***PSO 4:*** to be well trained with problem-solving philosophical approaches that are pertinent across the disciplines. ***PSO 5:*** to possess sufficient knowledge how to synthesize a chemical compound and perform necessary characterization and analysis in support of the formation of the product by using modern analytical tools and advanced technologies. ***PSO 6:*** To be technically well trained with modern devices and Chemistry based software and has powerful knowledge in different disciplines of Chemistry so they can easily involve themselves in theory and laboratory-based on their research activities. ***PSO 7:*** To be team players, with productive co-operations involving members from diverse socio-cultural backgrounds.

COURSE OUTCOMES(CO)

Semester	Course Code	Course Outcome
I Sem	**DSC-1T and DSC-1P** : Analytical, Physical, Inorganic and Organic Chemistry-I	**CO 1:** To explain basic laboratory practices like calibration of glassware, sampling, handling acids and safety precautions. **CO 2:** To prepare the solutions after calculating the required quantity of salts in preparing the reagents/solutions and dilution of stock solution. **CO 3:** To describe the limitations of Classical Mechanics which necessitated the development of Quantum Mechanics. **CO 4:** To solve the Schrodinger's equation to obtain wave function for a basic type of Potential in one dimension and predict the shapes of orbitals as well as probability Distributions **CO 5:** To justify the need for quantum mechanical structure of atoms **CO 6:** To describe the periodicity in physical and chemical properties. Of elements in the Periodic table. **CO 7:** To explain the nature of bonding in organic compounds using concepts such as Conjugation, resonance, etc. **CO 8:** To learn methods of synthesis of alkanes, alkenes and alkynes along with their reactions. **CO 9:** To conduct a variety of volumetric estimations such as acid-base, redox and iodometric titrations. **CO 10:** To purify/crystallize organic compounds by proper selection of suitable solvents. **CO 11:** To synthesize different organic compounds using conventional/green methods. **CO 12:** To calibrate common laboratory glassware like pipette, burette and volumetric flask.

II Sem	**DSC-2T and DSC-2P** : Analytical, Physical, Inorganic and Organic Chemistry-II. and Inorganic and Physical Chemistry Practicals -II	**CO 1:** To explain the principles and concepts related to titrimetric analysis with reference to acid-base, precipitation and complexometric titrations. **CO 2:** To handle toxic chemicals, concentrated acids and organic solvents and practice safety procedures. **CO 3:** To write the mechanisms of SN1 and SN2 reactions taking suitable examples. **CO 4:** To illustrate types of aromatic electrophilic and nucleophilic substitution reactions with examples. **CO 5:** To give a comprehensive description of the gaseous state in terms of molecular velocity, their distribution based on Maxwell-Boltzmann law, types of molecular velocities, molecular collision parameters, critical phenomena and liquefaction of gases. **CO 6:** To explain important properties of liquid state such as viscosity, surface tension, refraction andparachor by defining them and elaborating on their experimental determination. **CO 7:** To learn methods of determining molecular weights of solutes by measuring colligative properties and the concept of distribution law along with its applications. **CO 8:** To describe the crystalline state in detail using the terms unit cell, Bravias lattices, Miller indices, Crystal systems, symmetry elements and lattice planes. **CO 9:** To estimate components in a mixture, nitrite in a water sample and hardness of water by volumetry. **CO 10:** . To estimate presence of nickel, barium and copper in solutions by gravimetry. **CO 11:** To measure physical properties of a liquid such as density, viscosity, surface tension and refraction using specific instruments. **CO 12:** To study the distribution phenomena of different systems and evaluate the corresponding distribution coefficient.

III Sem	**DSC-3T and DSC-3P:** Analytical and Organic Chemistry-II	**CO 1:** To study the interrelationship among frequency, wavelength and wave number and importance of validation parameters of an instrumental method. **CO 2:** To understand the principle, types and applications of solvent extraction. **CO 3:** To study the concept of mechanism and its importance. **CO 4:** To describe the **c**oncept of stereochemistry and its importance. **CO 5:** To know the concept and importance of intermediates in organic chemistry. **CO 6:** To study the theory and concept of Cis-, Trans-isomerism and its importance and the techniques to differentiate between them. **CO 7:** To know the principle of colorimetric analysis and construction of calibration plot. **CO 8:** To understand the techniques to identify the functional groups in a compound by performing physical and chemical tests.
IV Sem	**DSC-4:** Inorganic and Physical Chemistry-II	**CO 1:** To predict the nature of the bond formed between different elements **CO 2:** To identify the possible type of arrangements of ions in ionic compounds **CO 3:** To write Born - Haber cycle for different ionic compounds **CO 4:** To relate different energy parameters like, lattice energy, entropy, enthalpy and solvation energy in the dissolution of ionic solids **CO 5:** To explain covalent nature in ionic compounds **CO 6:** To write the M.O. energy diagrams for simple molecules **CO 7:** To differentiate bonding in metals from their compounds **CO 8:** To learn important laws of thermodynamics and their applications to various thermodynamic systems **CO 9:** To understand adsorption processes and their mechanisms and the function and purpose of a catalyst. **CO 10:** To understand the chemical reactions involved in the detection of cations and anions.

		CO 11: To interpret the behaviour of interfaces, the phenomena of physisorption and chemisorption and their applications in chemical and industrial processes