

DEPARTMENT OF CHEMISTRY

Programme: B.Sc., Chemistry

PO No.	Programme Outcomes
	The programme aids the graduates to
PO-1	Emerge with competency in the subject of Chemistry and apply knowledge to cater to the needs of Society / Employer / Institution / Own Business / Enterprise
PO-2	Imbibe analytical/critical/logical/innovative thinking skills in the field of Basic and Applied Science
PO-3	Acquire distinct traits and ethics with high professionalism to gain a broader insight into the domain concerned, the nation and themselves
PO-4	Evolve as chemists with strong fundamentals and conceptual clarity supported by specialized knowledge and high competency in scientific and analytical skills that meet current and future needs
PO-5	Create, select, apply, adopt and extend appropriate knowledge, techniques, resources and modern scientific tools to a range of activities with an understanding of the associated limitations for the prospect of science and society.

PSO No.	Programme Specific Outcomes
	After successful completion of three year degree program in Chemistry a Graduate will be able to
PSO-1	make use of the concepts of organic, inorganic, physical chemistry and their applications in day to day life
PSO-2	validate the multiple utility of chemistry in various interdisciplinary aspects
PSO-3	use modern chemical tools, Models, Chem-draw, Charts, computational Chemistry Softwares and Analytical Equipment.
PSO-4	execute new ideas in higher education, research and development using the principles and techniques of Chemistry
PSO-5	be competent to take challenging positions in industry, academics and government sectors by learning various qualitative and quantitative analytical skills and their applications.

Course Title	CORE CHEMISTRY - I	
CODE	23CHUC101	
CO No.	Course Outcomes	Knowledge Level
CO-1	Recognize the formation of ionic bonding and their characteristics	K2, K3
CO-2	Apply the concept of hybridization and explore molecular geometry	K2
CO-3	Acquire knowledge of polar effects and reactive intermediates	K1, K3
CO-4	Interpret the Chemistry of Alkenes and Dienes	K2, K3
CO-5	Realize the chemistry of Cycloalkanes, Alkynes, and concept of Conformations,	K2, K3

Course Title	CORE CHEMISTRY - II	
CODE	23CHUC102	
CO No.	Course Outcomes	Knowledge Level
CO-1	Acquire Knowledge of Ozone, Hydrogen peroxide and Sulphur family elements.	K1, K2
CO-2	Apply the concept of aromaticity to benzenoid compounds and interpret the mechanisms of electrophilic substitution reactions.	K2
CO-3	Recognize the Liquid crystals and condensed phase.	K2, K3
CO-4	Understand the background of quantum chemistry and advanced approach to quantum mechanical model of atoms.	K2, K3
CO-5	Develop ideas on quantum mechanical approach to larger molecules.	K2, K3

Course Title	CORE CHEMISTRY - III	
CODE	23CHUC203	
CO No.	Course Outcomes	Knowledge Level
CO-1	Interpret the Key Features of Co-ordination Complexes and its applications	K1,
CO-2	Apply the concepts of gaseous law and to study their properties	K2, K3
CO-3	Realize the thermodynamic aspect of various energy transformations	K2, K3
CO-4	Analyze the potential of Thermo chemical conversions through 1 st law	K2, K3
CO-5	Investigate substitution mechanisms in organic conversions and the factors influencing	K2, K3

Course Title	CORE CHEMISTRY - IV	
CODE	23CHUC204	
CO No.	Course Outcomes	Knowledge Level
CO-1	Comprehend the principles and steps involved in the extraction of metals	K1, K2, K3
CO-2	Compare the Physical and Chemical properties of Alkali and Alkaline Earth metals	K2, K3
CO-3	Interpret the reactions of carbonyl compounds- Aldehydes and Ketones	K2, K3
CO-4	Analyse thermodynamic processes and derive expressions for II law of Thermodynamics	K2, K3
CO-5	Apply the concepts of Chemical Equilibrium	K2, K3

Course Title	Core Chemistry Practical I INORGANIC QUALITATIVE SEMI MICRO ANALYSIS	
CODE	23CHUCP01	
CO No.	Course Outcomes	Knowledge Level
CO-1	Perform systematic semi micro qualitative analysis	K1
CO-2	Interpret the nature of various inorganic anions and cations	K2 K3
CO-3	Identify and detect various anions and cations through their reactions	K2
CO-4	Eliminate interfering anions from the inorganic mixtures	K2 K3
CO-5	Identify and cations group according to their properties	K1 K3

Course Title	ALLIED CHEMISTRY I (FOR I B.Sc., N&D and I B.Sc., PHYSICS)	
CODE	23CHUA101	
CO No.	Course Outcomes	Knowledge Level
CO-1	Understand the nature of chemical bonding and geometry of various molecules	K1
CO-2	Recognise Inorganic fertilizers, Hardness of Water and Treatment of water for municipal Supply	K2 K3
CO-3	Interpret various organic reactions and their mechanism, stereoisomerism	K2
CO-4	Understand the chemistry of dyes, sulpha drugs, penicillin and vitamins	K2 K3
CO-5	Analyse the concepts of chemical kinetics and chromatography	K3

Course Title	ALLIED CHEMISTRY II (FOR I B.Sc., N&D and I B.Sc., PHYSICS)	
CODE	23CHUA202	
CO No.	Course Outcomes	Knowledge Level
CO-1	Distinguish and analyse the quality of oils and fats	K1
CO-2	Recognise Inorganic fertilizers, Hardness of Water and Treatment of water for municipal Supply.	K2, K3
CO-3	Describe the quality and types of fuels	K2
CO-4	Recognize various polymers and their applications	K2, K3
CO-5	Interpret the principles of adsorption and apply them to various processes.	K2, K3

Course Title	ALLIED CHEMISTRY PRACTICALS (for B.Sc., N & D and B.Sc.,Physics)	
CODE	23CHUAP01	
CO No.	Course Outcomes	Knowledge Level
CO-1	Perform quantitative analysis of solutions containing inorganic substances	K1
CO-2	Carryout skillfully the qualitative and quantitative analysis of solutions	K2, K3
CO-3	Identify and detect various organic functional groups.	K2
CO-4	Identify the special elements present in organic compounds	K3
CO-5	Analyze the aliphatic/aromatic, saturated unsaturated character of organic compounds	K3

Course Title	CORE CHEMISTRY - V	
CODE	21CHUC305	
CO No.	Course Outcomes	Knowledge Level
CO-1	Acquire knowledge in Boron family and compounds of Boron	K2, K3
CO-2	Apprehend the metallurgy of Germanium and Transition metals	K1, K3
CO-3	Assist to understand the Chemistry of Phenols	K1, K2, K3
CO-4	Procure the reactions of Aliphatic and aromatic amines	K1, K2, K3
CO-5	Apply the concept of Phase rule to one and two component systems	K2, K3

Course Title	CORE CHEMISTRY - VI	
CODE	21CHUC406	
CO No.	Course Outcomes	Knowledge Level
CO-1	Recognise the Purification and Estimation techniques in organic chemistry	K2
CO-2	Illuminate the perception of dye chemistry	K2, K3
CO-3	Perceive the metallurgy of iron group metals and their uses	K2, K3
CO-4	Understand the ideal, nonideal solutions and colligative properties	K2, K3
CO-5	Describe the adsorption isotherms	K1, K2

Course Title	CORE PRACTICAL II- VOLUMETRIC AND ORGANIC ANALYSIS	
CODE	21CHUCP02	
CO No.	Course Outcomes	Knowledge Level
CO-1	Perform quantitative analysis of solutions containing inorganic substances	K1
CO-2	Carryout skillfully the qualitative and quantitative analysis of solutions	K2, K3
CO-3	Identify and detect various organic functional groups and special elements present in organic compounds.	K2
CO-4	Analyze the aliphatic/aromatic, saturated unsaturated character of organic compounds	K3
CO-5	Prepare derivatives of organic compounds	K3

Course Title	CoreChemistryPaper – VII INORGANICCHEMISTRY	
CODE	21CHUC507	
CO No.	Course Outcomes	Knowledge Level
CO-1	Acquire knowledge of metallic bonding and alloys	K2,K3
CO-2	Understand the concept of radioactivity and nuclear Reactions	K2
CO-3	Interpret the nature of isotope and isobars	K2,K3
CO-4	Describe the concepts and behaviour of acids and bases	K2,K3
CO-5	Classify the types and properties of solvents	K2,K3

Course Title	Core Chemistry – VIII ORGANIC CHEMISTRY	
CODE	21CHUC508	
CO No.	Course Outcomes	Knowledge Level
CO-1	Apply the concept of optical isomerism and interpret the stereochemistry of aliphatic and alicyclic compounds	K2, K3,K4
CO-2	Analyze and differentiate the types and mechanism of molecular rearrangement reaction	K2,K3
CO-3	Gain knowledge about structural elucidation of carbohydrates and its interconversion methods	K1, K2,K3
CO-4	Classify and characterize the structure and properties of amino acids and proteins	K2,K3
CO-5	Occur knowledge about the synthesis and properties of heterocyclic compounds	K2, K3

Course Title	ELECTRO CHEMISTRY	
CODE	21CHUC509	
CO No.	Course Outcomes	Knowledge Level
CO-1	Explain principles and theories of electrical and electrolytic conduction and able to perform conductometric titrations	K1,K2, K3
CO-2	Construct electrochemical cell of any combination of metals and calculate emf	K2,K3
CO-3	Analyse the performance of concentration cells and perform potentiometric titrations	K2,K3,K4
CO-4	Carry out qualitative and quantitative polarographic analysis	K2,K3,K4
CO-5	Evaluate and design corrosion control methods	K2, K3,K4

Course Title	Elective Paper - I	
CODE	ANALYTICAL CHEMISTRY	
CO No.	Course Outcomes	Knowledge Level
CO-1	Explain the fundamental principles and techniques in analytical chemistry and able to draw the structure of Molecules with the aid of computer.	K1, K2
CO-2	Acquire the knowledge about Errors, Precision & Accuracy, report of Analytical data and to grasp the significance of Electro analytical techniques	K3, K4,
CO-3	Apply the principles, rules and the steps implicated in Gravimetric & Electro-gravimetric Analysis	K2,K3
CO-4	Acquainted with the principles and Applications of Chromatographic techniques	K2,K3
CO-5	Stature the principle, instrumentation and application of Thermo Analytical methods	K2, K3

Course Title	Elective Paper I	
CODE	PHARMACEUTICAL CHEMISTRY	
CO No.	Course Outcomes	Knowledge Level
CO-1	Explain the important terms in Pharmaceutical Chemistry and understand the first aid techniques	K1,K2, K3
CO-2	Acquire knowledge of food poisoning, causes and treatment of common diseases and Indian medicinal plants	K2
CO-3	Obtain the understanding of Blood and Hematological agents	K1,K3
CO-4	Describe the organic Pharmaceutical aids and need of storage of Pharmaceutical Substances	K2,K3
CO-5	Explainthe clinical testing of sugar, serum, protein, bile pigments	K2, K3

Course Title	Core Chemistry Paper- X PRINCIPLES AND APPLICATIONS OF SPECTROCOPY	
CODE	21CHUC610	
CO No.	Course Outcomes	Knowledge Level
CO-1	Assess the electrical and magnetic properties of molecules and interpret the interaction of electromagnetic radiation with matter.	K1,K2, K3
CO-2	Elucidate the types of bonding in organic compounds	K2 K3,K4
CO-3	Identify the functional groups in organic compounds by interpretation of IR spectra	K2,K3,K4
CO-4	Compare and classify the types of protons in organic molecules.	K2,K3
CO-5	Interpret the mass spectra to arrive at the molecular formula and molecular weight of organic compounds.	K2, K3,K4

Course Title	Core Paper- XI CHEMICAL KINETICS	
CODE	21CHUC611	
CO No.	Course Outcomes	Knowledge Level
CO-1	Apply empirical laws and to the experimental aspects of rate laws	K2, K3
CO-2	Interpret the order of reactions and methods of experimental techniques	K2,K3
CO-3	Acquire knowledge about reaction rate theories	K1,K3
CO-4	Categorize the catalysts and their kinetics	K2,K3
CO-5	Relate the kinetics of photochemical reaction	K3, K4

Course Title	Core Chemistry Paper XII CHEMISTRY OF NATURAL PRODUCTS	
CODE	21CHUC612	
CO No.	Course Outcomes	Knowledge Level
CO-1	Acquire the knowledge of isolation and structure elucidation of some important terpenoids	K1,K2, K3
CO-2	Elucidate the structure of alkaloids	K1,K2,K3
CO-3	Attain the understanding of Vitamins and their importance	K1,K3
CO-4	Realize the information about the chemistry of Hormones and Steroids	K2,K3
CO-5	Attain awareness about medicinal plants	K2, K3

Course Title	Elective Paper -II POLYMER CHEMISTRY	
CODE	21CHUE613	
CO No.	Course Outcomes	Knowledge Level
CO-1	Describe basic concepts of polymerization and methods of polymerisation	K2, K3
CO-2	Differentiate various types of polymerisation	K2
CO-3	Establish stereoregulation in polymers	K2,K3
CO-4	Determine the molecular weights of polymers	K2,K3
CO-5	Identify methods used for preparation of polymers	K2, K3

Course Title	Elective Paper II	
	WATER – QUALITY ANALYSIS AND TREATMENT	
CODE	21CHUE622	
CO No.	Course Outcomes	Knowledge Level
CO-1	Acquire knowledge of physical and chemical properties of water	K1,K2
CO-2	Acquainted with techniques dealing purification of water	K1,K2,K3
CO-3	Obtain the understanding of hardness of water and its removal	K2,K3
CO-4	Receive the awareness of waste water treatment and realize the importance of reuse of water	K2,K3
CO-5	Gain knowledge of water sample collection and analytical testing	K2, K3

Course Title	Core Chemistry Practical - III	
	GRAVIMETRIC ANALYSIS AND PHYSICAL CHEMISTRY	
CODE	21CHUCP03	
CO No.	Course Outcomes	Knowledge Level
CO-1	Carry out different types of conductometric titrations	K2, K3
CO-2	Implement potentiometric titration of different kinds	K2,K3
CO-3	Determine molecular weight and transition temperature of various substances	K2,K3
CO-4	Evaluate the CST of partially miscible liquids	K2,K3
CO-5	Perform quantitative analysis of substances by gravimetry	K2, K3

Course Title	ELECTIVE PRACTICAL	
CODE	21CHUEP01	
CO No.	Course Outcomes	Knowledge Level
CO-1	Extend the theoretical knowledge of chemistry to practical applications	K2, K3
CO-2	Perform quantitative analysis by complexometry	K2, K3
CO-3	Carry out colorimetric estimation of various ions	K2, K3
CO-4	Determine melting and boiling point of various substances	K2, K3
CO-5	Execute dyeing of different types of fabrics	K2, K3

Course Title	ALLIED CHEMISTRY I (FOR B.Sc., BOTANY and ZOOLOGY)	
CODE	21CHUA303	
CO No.	Course Outcomes	Knowledge Level
CO-1	Distinguish and analyse the quality of oils and fats	K1
CO-2	Recognise Inorganic fertilizers, Hardness of Water and Treatment of water for municipal Supply.	K2, K3
CO-3	Describe the quality and types of fuels	K2
CO-4	Recognize various polymers and their applications	K2, K3
CO-5	Interpret the principles of adsorption and apply them to various processes.	K2, K3

Course Title	ALLIED CHEMISTRY II (FOR B.Sc., BOTANY and ZOOLOGY)	
CODE	21CHUA404	
CO No.	Course Outcomes	Knowledge Level
CO-1	Realize the concepts of chemistry of coordination compounds and Bio inorganic chemistry	K1
CO-2	Classify and identify the sources of carbohydrates and vitamins	K2 K3
CO-3	Interpret the properties of amino acids and proteins and acquire skills in first aid.	K2
CO-4	Familiarize the nature of various therapeutic drugs	K2 K3
CO-5	Categorize the chemistry of different cosmetics and soaps	K1 K3

Course Title	ALLIED CHEMISTRY PRACTICALS (FOR B.Sc., BOTANY and ZOOLOGY)	
CODE	21CHUAP01	
CO No.	Course Outcomes	Knowledge Level
CO-1	Realize the concepts of chemistry of coordination compounds and Bio inorganic chemistry	K1
CO-2	Classify and identify the sources of carbohydrates and vitamins	K2 K3
CO-3	Interpret the properties of amino acids and proteins and acquire skills in first aid.	K2
CO-4	Familiarize the nature of various therapeutic drugs	K2 K3
CO-5	Categorize the chemistry of different cosmetics and soaps	K1 K3