

PROGRAMME SPECIFIC OUTCOMES, PROGRAMME OUTCOMES AND COURSE OUTCOMES

PG DEPARTMENT OF CHEMISTRY

PART – III CHEMISTRY, B.SC., (CHE), EXTRA-CREDIT COURSES & VALUE-ADDED COURSES

PSO, PO & CO STATEMENTS / 2022 - 2023

PSOs	PROGRAMME SPECIFIC OUTCOMES
PSO1	Have appropriate knowledge in the main areas of chemical sciences.
PSO2	Analyse and understand the experimental problems, design a problem solving method, carrying out the suitable experimental solutions.
PSO3	Effective communication skill, develop critical thinking, be confident in carrying out all challenges.
PSO4	Get exposure and involve in modern trends in chemical research.
PSO5	Achieve employment in chemical related industries, public administration, academic fields and empower new avenues.
PART – III CHEMISTRY	
B.SC., CHEMISTRY	
Part – III B.SC., CHEMISTRY / PROGRAMMES OUTCOMES	
POs	Description of POs
PO1	Explain the scientific principles in various fields.
PO2	Display practical skills in their career, intellectual analysis of problems and lead a team, apply entrepreneurial skills and develop a leadership quality.
PO3	Enrich the academic career by doing higher education and have a successful attitude to do research.
PO4	Handle standard equipments and to analyze the data.

PO5	Gains skills in spectral, analytical, qualitative and quantitative techniques which will be useful in Industry.	
Part – III B.SC., CHEMISTRY / COURSE OUTCOMES		
	Description of COs	Bloom's Taxonomy / Cognitive Domain
AUCC1	General Chemistry-1	
CO1.	To understand the Periodic table and Periodic properties	Comprehension (Level K2)
CO2.	To gain insight into valence bond theory, molecular orbital theory and the concept of hybridization	Knowledge (Level K1)
CO3.	To describe different types of catalysis and their kinetic study focus with special Focus on enzyme catalysis	Knowledge (Level K1)
CO4.	To explain the rate of chemical reaction	Knowledge (Level K1)
CO5.	To Explain the theory of electrolytic conductors	Knowledge (Level K1)
AUCC2	Organic Chemistry- I	
CO1.	To discuss the IUPAC Nomenclature of organic Compounds, Detection, Estimation and Purification techniques of organic compounds.	Comprehension (Level K2), Knowledge (Level K1)
CO2.	To identify electrophiles and Nucleophiles and the chemical reactions involving these reagents.	Application (Level K3)
CO3.	To Interpret the Preparations, Properties of alkanes and alkenes.	Analysis (Level K4)
CO4.	To Illustrate the types of isomerism and Preparation, properties of dienes and alkynes.	Comprehension (Level K2), Application (Level K3)
CO5.	To Explain the mechanism of different types of organic reactions.	Knowledge (Level K1), Application (Level K3)
AUCLT1	Laboratory Techniques	
CO1.	To impart knowledge on handling of concentrated acid, bases and hazardous Chemicals.	Comprehension (Level K2)
CO2.	To Explain the principles of Volumetric Analysis & Preparation of stock solutions	Knowledge (Level K1), Application (Level K3)
CO3.	To discuss the types of titrations.	Comprehension (Level K2)
CO4.	To identify the group separation of common cations, interfering and non- interfering anions.	Application (Level K3)
CO5.	To gain practical skills in physical chemistry experiments.	Analysis (Level K4)
AUCC3	General Chemistry – II	
CO1.	To Know the Structure and Compound Identification in the Solid State.	Knowledge (Level K1)
CO2.	To Explain the experimental method of determination of interplanar spacing	Comprehension (Level K2)
CO3.	To Understand the concept of various steps involved in metallurgical Process	Application (Level K3)
CO4.	To gain knowledge and develop an understand of the kinetic theory of gases	Analysis (Level K4)

CO5.	To Compare the penetrating power of alpha, beta, neutron and gamma radiation	Evaluation (Level K5)
AUCPP2 Pulp and Paper Technology		
CO1.	To Discuss the manufacture of pulp and the process involved	Comprehension (Level K2)
CO2.	To describe the types of pulp	Knowledge (Level K1)
CO3.	To Illustrate various steps involved in the manufacture of paper	Comprehension (Level K2)
CO4.	To Explain the uses of paper	Knowledge (Level K1)
CO5.	To identify paper Industries in India	Comprehension (Level K2)
AUCC4 Physical Chemistry – I		
CO1.	Understand the basic concepts of phase rule.	Comprehension (Level K2)
CO2.	Know the terms involve in thermodynamics and zeroth law of thermodynamics,	Comprehension (Level K2)
CO3.	Gain knowledge on thermochemistry and chemical equilibrium	Knowledge (Level K1), Comprehension (Level K2)
CO4.	Gain knowledge on laws of solution and on colligative properties of solutions	Knowledge (Level K1), Comprehension (Level K2)
CO5.	Know the laws of photochemistry and concepts of fluorescence, phosphorescence and chemiluminescence	Comprehension (Level K2), Analysis (Level K4)
AUCC5 Organic, Inorganic and Analytical Chemistry		
CO1.	To describe the preparation , Properties and uses of alcohols, thioalcohols, ethers, thioethers.	Application (Level K3)
CO2.	To discuss the preparation, properties of polyhalogen derivatives	Comprehension (Level K2)
CO3.	To Illustrate the anomalous behaviour of Li, Be and the comparison of IA group elements with II A group elements.	Analysis (Level K4)
CO4.	To Discuss the chemistry of p- block elements	Comprehension (Level K2), Application (Level K3)
CO5.	To Explain the principles of volumetric analysis and types of Titrations.	Knowledge (Level K1)
AUCA3 Inorganic, Organic and Physical Chemistry		
CO1.	To Explain how to respond to common emergencies that could occur in laboratories, such as fires , explosions, chemical exposures, injuries and chemical spillkls	Comprehension (Level K2)
CO2.	To gain insight in to valence bond theory molecular orbital theory and the concept of hybridization	Knowledge (Level K1)
CO3.	To Recognise many functional groups and their reactivity	Knowledge (Level K1)

CO4.	To Explain common and long – term side effects of Chemotherapy Drugs	Comprehension (Level K2)
CO5.	To understand the different theories of Catalysis.	Comprehension (Level K2)
AUCPS3 Polymer Science		
CO1.	To Explain the basic concepts of polymers.	Knowledge (Level K1)
CO2.	To Discuss the types of polymerizations.	Application (Level K3)
CO3.	To Illustrate the properties of polymer.	Comprehension (Level K2)
CO4.	To Describe various methods used to determine the molecular weight of polymers.	Application (Level K3)
CO5.	To Explain preparation and uses of various Polymers.	Application (Level K3)
AUCN1 Chemistry In Everyday Life		
CO1.	To learn the types of fabrics, fading, starching process.	Comprehension (Level K2)
CO2.	To acquire knowledge about types of soaps whiteners, stiffeners, flavouring agents	Comprehension (Level K2)
CO3.	To understand soft and hard utensil cleaning liquid soaps	Comprehension (Level K2)
CO4.	To acquire a comprehensive knowledge about Floor cleaning agents and Anti mosquito repellent machines	Comprehension (Level K2)
CO5.	To understand the Chemicals used in water purifiers and germicidal effect of uv radiation	Comprehension (Level K2)
AUCC6 Inorganic Chemistry - I		
CO1.	To Describe the difference between strong acids/ bases and weak acids/ bases	Knowledge (Level K1)
CO2.	To Recognise which types of Isomerism are possible for a given Complex.	Comprehension (Level K2)
CO3.	To understand the key Features of Co-ordination Compounds Including the variety of structure co-ordination Numerism regards and cholates etc.	Comprehension (Level K2)
CO4.	Apply to write electronic Configuration of given Atomic number.	Analysis (Level K4)
CO5.	To Explain the structure of metallic carbonlys and metallic nytrosyls	Knowledge (Level K1)
AUCA4 Inorganic, Organic and Physical Chemistry		
CO1.	To Identify the different unit operations used for the preparation of coal for its utilization in thermal power plants and cove overns	Comprehension (Level K2)
CO2.	To Understand the concept of various steps involved in metallungical process	Comprehension (Level K2)
CO3.	To describe the properties of polymer chemistry	Comprehension (Level K2)
CO4.	To understand the applications of soaps and detergents	Comprehension (Level K2)
CO5.	To derive an expression for thermodynamic work at the moving boundary of a simple compressible system	Application (Level K3)
AUCDC4 Dye Chemistry		

CO1.	To understand the principles of colour and its relation with compound's structure.	Knowledge (Level K1), Evaluation (Level K1)
CO2.	To analyze and classify dyes based on their chemical structure and applications.	Knowledge (Level K1), Application (Level K3)
CO3.	To analyze and classify dyes based on their number of azo groups.	Comprehension (Level K2), Application (Level K3)
CO4.	To understand the synthesis and applications of dyes.	Comprehension (Level K2), Application (Level K3)
CO5.	To outline the importance of pigments in various fields.	Knowledge (Level K1), Analysis (Level K4)
AUCC7	Organic Chemistry - II	
CO1.	To discuss Bayer's strain theory and the structure of naphthalene	Analysis (Level K4), Evaluation (Level K5)
CO2.	To Arrange the acidity of Substituted phenols with phenol	Knowledge (Level K1)
CO3.	To Describe the preparation and properties of aromatic substituted acids.	Comprehension (Level K2), Application (Level K3)
CO4.	To Examine the configuration of geometrical isomers and optical isomers.	Analysis (Level K4)
CO5.	To compare the conformational isomerism with configurational isomerism.	Comprehension (Level K2)
AUCC8	Inorganic Chemistry – II	
CO1.	To Describe the Classification of Solvents and the Chemical reactions that Occur in Liquid Ammonia	Knowledge (Level K1)
CO2.	To Explain the oxides and oxyacids of bromine, interhalogen compounds & Pseudohalogens.	Knowledge (Level K1)
CO3.	To Discuss the structure of diborane, preparation, Properties, structure and uses of borazoles.	Knowledge (Level K1)
CO4.	To Illustrate Synthesis – Properties and uses of fluorocarbons.	Application (Level K3)
CO5.	To interpret the food adulteration, classification of adulteration and food laws and standards	Application (Level K3)
AUCE1	Nanotechnology and Green Chemistry	
CO1.	To illustrate the preparation of different types of nano particles	Application (Level K3)
CO2.	To know the preparations of nano materials:	Comprehension (Level K2)
CO3.	To discuss the applications of nano technology in nano cosmetics, textile, nano sensors, cancer therapy	Application (Level K3)

CO4.	To study Solvent free microwave- assisted organic synthesis	Comprehension (Level K2), Application (Level K3)
CO5.	To study the synthesis of Ionic liquids, advantages and applications of Super critical Carbondioxide.	Comprehension (Level K2), Application (Level K3)
AUCE1 Water Treatment and Analysis		
CO1.	To Understand the quantitative information on the physical , chemical and biological charactertics of water via statistical sampling.	Comprehension (Level K2)
CO2.	To Explain the importance of ground water , surface water pollution & its harmful effects.	Knowledge (Level K1)
CO3.	Know the types of water treatment methods.	Comprehension (Level K2)
CO4.	To acquire knowledge about the different steps involved in primary, secondary and tertiary treatment of waste water.	Comprehension (Level K2)
CO5.	To Understand how water resources management are developed.	Comprehension (Level K2)
AUCE2 Analytical Chemistry and Elements of Organic Spectroscopy		
CO1.	Explain the importance of Analytical methods in qualitative and quantitative analysis	Analysis (Level K4)
CO2.	To Analyze the purity of Samples and precipitates	Analysis (Level K4)
CO3.	To Interpret UV, IR, Spectra and their applications	Comprehension (Level K2), Application (Level K3)
CO4.	To Illustrate NMR, Mass and Raman spectra with their applications	Application (Level K3), Analysis (Level K4)
CO5.	To apply different types of chromatographic techniques in separation of mixtures	Comprehension (Level K2), Application (Level K3)
AUCE2 Pharmaceutical Chemistry		
CO1.	To know the terminologies used in pharmaceutical chemistry	Knowledge (Level K1), Comprehension (Level K2)
CO2.	To understand various traditional practice	Comprehension (Level K2)
CO3.	To gain knowledge about analgesics, antiseptics & disinfectors	Comprehension (Level K2)
CO4.	To know the uses of various anesthetics	Knowledge (Level K1), Comprehension (Level K2)
CO5.	To gain knowledge about different types of medicines to cure various diseases.	Knowledge (Level K1), Comprehension (Level K2)

AUCPH4 Public Health Services		
CO1.	To acquire knowledge and skills related to the performance of health care activities in the community and to understand the concept of public health and develop skills to undertake public health activities and	Knowledge (Level K1)
CO2.	To Acquire knowledge of the principles and practices of health guidance and education. Recognize and utilize opportunities for health education.	Knowledge (Level K1), Application (Level K3)
CO3.	Function effectively for the promotion of the health and family welfare by participating in health education activities.	Comprehension (Level K2), Application (Level K3)
CO4.	To acquire an understanding of major communicable diseases and its implications for protection and restoration of health.	Application (Level K3)
CO5.	To Acquire an understanding of Signs and symptoms, Prevalence, Primordial, Care and Treatment of Non communicable Disease and its implication for protection and restoration of health	Knowledge (Level K1) Analysis (Level K4)
AUCC9 Organic Chemistry - III		
CO1.	To Understand the configuration of glucose and Surcose.	Knowledge (Level K1)
CO2.	To Explain the mechanism of Molecular rearrangements.	Comprehension (Level K2)
CO3.	To Apply the theory of colour and constitution of dyes.	Application (Level K3)
CO4.	To Interpret the significance of Alkaloids and hetrocyclic compounds	Analysis (Level K4)
CO5.	To Study the preparation, Properties of Terpenoids, proteins and Nucleic acids.	Knowledge (Level K1), Application (Level K3)
AUCC10 Physical Chemistry – II		
CO1.	To know the basic concepts of spectroscopy	Application (Level K3)
CO2.	To acquire knowledge on types of spectra ,diatomic molecule as harmonic and anharmonic oscillator and laser and maser.	Comprehension (Level K2)
CO3.	To study the basics of quantum mechanics	Knowledge (Level K1)
CO4.	To study the reaction rates and their theories, preparation and purification of colloids	Analysis (Level K4)
CO5.	To acquire knowledge on liquid crystals, their types and their arrangements.	Analysis (Level K4)
AUCE3 Petro Chemistry		
CO1.	To understand the occurrence ,composition, uses of petrochemicals and also to know the preparation of synthetic petroleum	Knowledge (Level K1), Evaluation(Level K5)

CO2.	To acquire knowledge on extraction of hydrocarbons and classification of petroleum products	Knowledge (Level K1), Application (Level K3)
CO3.	To sketch the fuel oils and classification of lubricants	Comprehension (Level K2), Application (Level K3)
CO4.	To understand chemistry of petroleum products and Inter – relationship of precursors from natural gas, Petroleum cuts & Coal.	Comprehension (Level K2), Application (Level K3)
CO5.	To outline the purification processes of petroleum products	Knowledge (Level K1), Analysis (Level K4)
AUCE3 Applied Chemistry		
CO1.	To know the systems of medicine	Comprehension (Level K2)
CO2.	To acquire knowledge on chemotherapy, hormones and vitamins and their functions and anaesthetics.	Knowledge (Level K1)
CO3.	To attain knowledge on preparation of rubber, polymerization and various values of oils and fats	Analysis (Level K4)
CO4.	To apprehend on fertilizers, insecticides and pesticides	Application (Level K3)
CO5.	Cognizant on pyrotechniques and manufacture of cement, glass and ceramics.	Application (Level K3)
AUCN2 Agricultural Chemistry		
CO1.	To understand the chemistry of food adulteration and adulterants	Comprehension (Level K2)
CO2.	To know the chemistry of food poisoning	Comprehension (Level K2)
CO3.	To acquire knowledge about food additives	Comprehension (Level K2)
CO4.	To understand the chemistry of beverages and soft drinks and to know the methods of preparing the soft drinks by field visits.	Comprehension (Level K2)
CO5.	To acquire knowledge about objectives of cooking and role of oil in cooking.	Comprehension (Level K2)
M.SC., CHEMISTRY		
M.SC., CHEMISTRY / PROGRAMMES		
OUTCOMES		
POs	Description of POs	
PO1	Explain the scientific principles in various fields.	
PO2	Display practical skills in their career, intellectual analysis of problems and lead a team, apply entrepreneurial skills and develop a leadership quality.	
PO3	Enrich the academic career by doing higher education and have a successful attitude to do research.	
PO4	Handle standard equipments and to analyze the data.	

PO5	Gain skills in spectral, analytical, qualitative and quantitative techniques which	
MSC., CHEMISTRY / COURSE OUTCOMES		
	Description of COs	Bloom's Taxonomy / Cognitive Domain
APCC1 Organic Chemistry -I		
CO1.	To Remember different types of reactive intermediates	Knowledge Level K1),
CO2.	To understand aromatic, non –aromatic and anti aromatic compounds	Comprehension (Level K2)
CO3.	To describe various mechanism of organic reactions	Analysis (Level K4) Evaluation (Level K5)
CO4.	To get knowledge about molecular rearrangements	Application (Level K3)
CO5.	To apply the concepts stereochemistry	Application (Level K3)
APCC2 Inorganic Chemistry - I		
CO1.	To apply VBT, MOT, VSEPR to molecules	Application (Level K3)
CO2.	To Acquire knowledge about bond properties and ionic bonding	Knowledge Level K1)
CO3.	To Analyze crystal system and crystal defects	Analysis (Level K4)
CO4.	To Explain various silicate structures	Analysis (Level K4)
CO5.	To Remember metallurgy of various metals	Knowledge Level K1)
APCC3 Physical Chemistry - I		
CO1.	To Recollect fundamentals of Thermodynamics.	Knowledge Level K1)
CO2.	To Appreciate the concepts of chemical kinetics.	Application (Level K3)
CO3.	To get Knowledge about Electro chemistry.	Comprehension (Level K2)
CO4.	To Interpret the Structure of electrical double layer.	Analysis (Level K4)
CO5.	To Explain Fluorescence and Phosphorescence.	Analysis (Level K4)
APCE1 Medicinal Chemistry and Drug Design		
CO1.	To Understand the basic features of molecular modeling	Comprehension (Level K2)
CO2.	To Understand Bio Inorganic compounds in medicine.	Comprehension (Level K2)

CO3.	To Apply important terminologies in Pharmaceutical Chemistry	Application (Level K3)
CO4.	To Explain the structure and uses of vitamins.	Analysis (Level K4)
CO5.	To Know about drugs	Knowledge Level K1)
APCE1 Clinical Microbiology and Biochemistry		
CO1.	To acquire knowledge about Incubation, Isolation of microbes from specimens.	Comprehension (Level K2)
CO2.	To Estimate Urea and bile Pigment	Analysis (Level K4)
CO3.	Apply methods to Determine glucose and Cholesterol	Application (Level K3), Analysis (Level K4)
CO4.	To Understand the vaccination	Comprehension (Level K2)
CO5.	To Remember insect borne, Water borne diseases and Toxic effects of metals	Knowledge Level K1)
APCC4 Organic Chemistry -II		
CO1.	To Apply reagents organic Synthesis.	Application (Level K3),
CO2.	To Understand molecular rearrangements.	Comprehension (Level K2)
CO3.	To recollect pericyclic reactions and cycloadditions.	Knowledge (Level K1),
CO4.	To Know about Retro Synthesis.	Comprehension (Level K2)
CO5.	To Explain photochemistry of aromatic compounds and photo oxidation	Analysis (Level K4)
APCC5 Inorganic Chemistry -II		
CO1.	To recollect Nomenclature, Isomerism, VBT, CFT of Coordination Compounds.	Knowledge (Level K1)
CO2.	To Understand Characteristics about characteristics of d-d transitions, selection rules, energy level diagrams of coordination compounds.	Comprehension (Level K2)
CO3.	To apply mechanism of electron transfer reactions in solution phase.	Application (Level K3)
CO4.	To explain preparation, structure, bonding and reaction of metal carbonyls and metal nitrosyls.	Analysis (Level K4)
CO5.	To interpret polymerization of olefins, carbonylation of methanol.	Analysis (Level K4)
APCC6 Physical Chemistry - II		
CO1.	To Understand postulates of quantum mechanics and Schrodinger equation	Comprehension (Level K2)
CO2.	To Derive angular momentum of operator.	Analysis (Level K4)
CO3.	To Remember molecular orbital and valence bond theory of molecules.	Knowledge (Level K1)
CO4.	To determine surface area.	Evaluation (Level K5)

CO5.	To Understand Polymerization.	Comprehension (Level K2)
APCE2 Analytical Techniques		
CO1.	To Explain HPLC and Gas Chromatography.	Analysis (Level K4)
CO2.	To Understand Gas Permeation chromatography, GCMS and LCMS.	Comprehension (Level K2)
CO3.	To Apply amperometry, Coulometry in titrations.	Application (Level K3)
CO4.	To Analyse spectrometry and thermal methods of analysis	Analysis (Level K4)
CO5.	To get knowledge about the theory of photo electron spectroscopy.	Knowledge (Level K1)
APCE2 Reaction Kinetics and Electro Chemistry		
CO1.	To Remember Arrhenius theory, Electrical double layer and Zeta potential.	Knowledge (Level K1)
CO2.	To Interpret kinetics of electron transfer, Charge transfer resistance.	Application (Level K3)
CO3.	To Understand and ARRT.	Comprehension (Level K2)
CO4.	To Explain various types of catalysis and theories of adsorption.	Analysis (Level K4)
CO5.	To discuss types and importance of corrosion.	Analysis (Level K4)
APCC7 Organic Chemistry - III		
CO1.	Applying Woodward's rule for calculating absorption maxima in UV Spectroscopy.	Application (Level K3)
CO2.	To recollect modes of vibrations in IR Spectroscopy.	Knowledge (Level K1)
CO3.	Analyse the structure of organic compounds using NMR spectroscopy.	Analysis (Level K4)
CO4.	To Understand carbon -13 NMR Spectroscopy.	Comprehension (Level K2)
CO5.	To Explain molecular ion peak, Nitrogen rule in mass Spectroscopy.	Evaluation (Level K5)
APCC8 Inorganic Chemistry - III		
CO1.	To apply IR spectroscopy in the structural elucidation of Inorganic molecules.	Application (Level K3)
CO2.	To Understand chemical shifts and coupling constants in NMR spectroscopy.	Comprehension (Level K2)
CO3.	To Analyse the EPR spectrum of Inorganic metal ion complexes and Mossbauer spectrum of Inorganic Compounds.	Analysis (Level K4)
CO4.	To remember nuclear chemistry.	Knowledge (Level K1)
CO5.	To Understand photochemistry of co-ordinate compounds.	Comprehension (Level K2)
APCC9 Physical Chemistry - III		
CO1.	To Understand concepts of group theory.	Comprehension (Level K2)
CO2.	To apply group theory to molecules.	Application (Level K3)

CO3.	To Explain rotation vibration spectra of diatomic and polyatomic molecules.	Analysis (Level K4)
CO4.	To interpret the significance of NMR Spectroscopy, Zeeman effect.	Application (Level K3)
CO5.	To recollect thermodynamics probability and entropy.	Knowledge (Level K1)
APCE3 Environmental Chemistry and Green Chemistry		
CO1.	To remember harmful effects of water pollutants.	Knowledge (Level K1)
CO2.	To Understand acid rain, Green house effect and ozone depletion.	Comprehension (Level K2)
CO3.	To gain knowledge about pesticides.	Comprehension (Level K2)
CO4.	To apply various methods in the treatment of drinking water.	Application (Level K3)
CO5.	To Explain different types of reactions in Green Chemistry.	Analysis (Level K4)
APCE3 Supra Molecular Chemistry and Chemo Informatics		
CO1.	To Recollect different types of notations in Chemoinformatics.	Knowledge (Level K1)
CO2.	To Understand computer packages modeling, molecular structure database.	Comprehension (Level K2)
CO3.	To Apply chemoinformatics in drug design.	Application (Level K3)
CO4.	To Explain Chemical structure search.	Analysis (Level K4)
CO5.	To Interpret Computer assisted structure elucidations and computer assisted synthesis design.	Application (Level K3)
APCC10 Chemistry of Natural Products and Bioinorganic Chemistry		
CO1.	To Understand and the properties of amino acids, proteins and the structure of DNA.	Comprehension (Level K2)
CO2.	To apply isoprene rule in terperoids.	Application (Level K3)
CO3.	To remember the general methods of structural analysis of alkaloids.	Knowledge (Level K1)
CO4.	To analyse the stereochemistry of cholesterol.	Analysis (Level K4)
CO5.	To Explain the role of metal ions in Biological systems.	Analysis (Level K4)
APCC11 Nano Chemistry		
CO1.	To Understand the different types of nanomaterials.	Comprehension (Level K2)
CO2.	To recollect the different methods of preparing nanomaterials.	Knowledge (Level K1)
CO3.	To apply nanotechnology in various fields.	Application (Level K3)
CO4.	To interpret carbon nanotubes.	Application (Level K3)

CO5.	To Illustrate lithographic and non lithographic techniques.	Analysis (Level K4)
APCE4 Industrial Chemistry		
CO1.	To Explain the manufacture of glass and refractories.	Analysis (Level K4)
CO2.	To apply paints and varnishes.	Application (Level K3)
CO3.	To Interpret the cleaning action of soap.	Analysis (Level K4)
CO4.	To recollect the manufacture and setting of cement.	Knowledge (Level K1)
CO5.	To Understand the types of batteries.	Comprehension (Level K2)
APCE4 Dairy and Leather Chemistry		
CO1.	To Illustrate composition and Physical properties of milk.	Analysis (Level K4) K4
CO2.	To Understand structure of hides and leather processing.	Comprehension (Level K2)
CO3.	To remember ceramic wares.	Knowledge (Level K1)K1
CO4.	To Describe classifications, Properties and functions of lubricants.	Analysis (Level K4) K4
CO5.	To Illustrate Explosives and rocket Propellants.	Application (Level K3)K3
EXTRA-CERDIT COURSES		
UDEFC Food Chemistry		
CO1.	To understand the chemistry of food adulteration and adulterants	Comprehension (Level K2)
CO2.	To know the chemistry of food poisoning	Comprehension (Level K2)
CO3.	To acquire knowledge about food additives	Comprehension (Level K2)
CO4.	To understand the chemistry of beverages and soft drinks and to know the methods of preparing the soft drinks by field visits.	Comprehension (Level K2)
CO5.	To acquire knowledge about various edible oils and the processing techniques related to oils.	Comprehension (Level K2)
UGECD Chemistry In Day Today Life		
CO1.	To learn the types of fabrics, fading, starching process.	Comprehension (Level K2)
CO2.	To acquire knowledge about types of soaps whiteners, stiffeners, flavouring agents	Comprehension (Level K2)
CO3.	To understand soft and hard utensil cleaning liquid soaps	Comprehension (Level K2)
CO4.	To acquire a comprehensive knowledge about Floor cleaning agents and Anti mosquito repellent machines	Comprehension (Level K2)
CO5.	To understand the Chemicals used in water purifiers and germicidal effect of uv radiation	Comprehension (Level K2)
UGEFCI Forensic Science & Crime Investigation		
CO1.	To learn crime investigation through diagnosis of poisoning and postmortem	Comprehension (Level K2)
CO2.	To acquire knowledge about explosions, the causes (gelatin sticks, TDX etc) and the security measures.	Comprehension (Level K2)

CO3.	To understand the methods of detecting Forgery in bank and educational records.	Comprehension (Level K2)
CO4.	To acquire a comprehensive knowledge about tracks and traces.	Comprehension (Level K2)
CO5.	To understand the chemical methods used in crime investigation (Medical aspects).	Comprehension (Level K2)
VALUE-ADDED COURSES		
19CHESC Soil Chemistry		
CO1.	Gaining theoretical Knowledge in soil chemistry	Knowledge(level 1)
CO2.	Gaining in depth Knowledge of soli bio chemistry and anomalous soils	Knowledge(level 1)
CO3.	Comprehending the values of soil chemistry in agriculture	Comprehension (level 2)
CO4.	Analyzing different methods for soil enrichment	Analysis(Level4)
CO5.	Creating new strategies to minimize soil pollution and detoxification	Synthesis (level6)
19CHECT Clinical Chemistry And Toxicology		
CO1.	To understand the carbohydrate metabolism	Understand (Level 2)
CO2.	Gaining knowledge on Renal function	Knowledge (Level 1)
CO3.	To Knowledge on Liver Function	Knowledge (Level 1)
CO4.	Applying gained Practical Knowledge of Blood analysis	Application (Level 3)
CO5.	Analysis the introduction of Toxicology	Analysis (Level 4)
19CHEPQ Pharmaceutical Quality & Quality Assurance		
CO1.	To Understand the concept of quality control and quality assurance	Knowledge (level 1)
CO2.	To comprehend the guidelines of Pharmacology	Comprehension(level 2)
CO3.	To know the organization and personal responsibilities of Pharmaceutical industries	Knowledge(level 1)
CO4.	To analyze various materials used in Pharmaceutical industries	Analysis (level 4)
CO5.	To acquire in-depth knowledge in documentation	Analysis(level 4)