

UCHE31		Biochemistry
CO1.	Understanding about lipids and fatty acids and cholesterol	Comprehension (Level 2)
CO2.	Understanding about proteins and their functions	Comprehension (Level 2)
CO3.	Learning about amino acids, function, synthesis, and their classification	Knowledge (Level 1)
CO4.	Differentiating nucleosides and nucleotides	Analysis (Level 4)
CO5	Analyzing the types and functions of hormones	Analysis (Level 4)
UCHN31		Water Treatment
CO1.	Gaining knowledge of water quality parameters, ground water and surface water pollution and its control measures.	Comprehension (Level 2)
CO2.	Practising the water treatment methods, sewage and industrial effluent treatment methods and water resources management.	Application (Level 3)
CO3.	Applying various methods to avoid pollutants and their effect on environment and on human health	Analysis (Level 4)
CO4.	Comprehending the concept of BOD & COD	Synthesis (Level 6)
CO5	Learning the basic information of water treatment methods for domestic and industrial purposes	Evaluation (Level 5)
UCHH31		Applied Chemistry-I
CO1.	Knowing about rubber and their types and synthesis	Knowledge (Level 1)
CO2.	Understanding about fibers and types of fibers	Comprehension (Level 2)
CO3.	Differentiating resin from plastics	Application (Level 3)
CO4.	Gaining knowledge on plastics and their types	Knowledge (Level 1)
CO5	Analyzing the types and uses of fertilizers	Analysis (Level 4)
UCHP41		Inorganic chemistry -I
CO1.	Applying gained knowledge on the arrangement of elements in the periodic table group 15 and group 17	Application (Level 2)
CO2.	Assessing the identification of the nature of chemical bond in a given inorganic compound.	Evaluation (Level 5)
CO3.	Using the apparatus used in volumetric analysis and organic salt analysis	Application (Level 3)
CO4.	Determining the existence of special types of compounds through weak chemical forces.	Synthesis (Level 5)
CO5	Solving problems of Bragg's equation.	Synthesis (Level 5)
UCHA42		Ancillary Chemistry –Practical-II
CO1.	Learning to make solution of various molar concentration.	Application (Level 3)
CO2.	Calculating the conversion of gram to molarity	Evaluation (Level 5)
CO3.	Using an understanding of various apparatus usage	Application (Level 3)
CO4.	Becoming capable of doing experimental projects and execute them.	Synthesis (Level 6)
CO5	Solving problems of molarity and normality.	Synthesis (Level 6)
UCHE42		Medicinal Chemistry

CO1.	Understanding the basic concepts and strategies in drug design and synthesis.	Comprehension (Level 2)
CO2.	Providing the preliminary introduction to vitamins and their classification	Knowledge (Level 1)
CO3.	Using an understanding of sulpha drugs and antimalarial activity	Application (Level 3)
CO4.	Working out the knowledge on Anesthetics drugs, antibiotics and their synthesis	Synthesis (Level 6)
CO5	Practising the gained knowledge on anaesthetics in daily life.	Synthesis (Level 6)
UCHS42 Clinical Chemistry		
CO1.	Understanding clinical biochemistry and laboratory practices	Comprehension (Level 2)
CO2.	Gaining knowledge of important of vitamins in daily life.	Knowledge (Level 1)
CO3.	Using an understanding of blood and composition	Application (Level 2)
CO4.	Determining the normal and abnormal constituents of urine through laboratory practices	Synthesis (Level 5)
CO5	Solving the problems of vitamin deficiency	Synthesis (Level 5)
UCHN42 Applied chemistry -II		
CO1.	Understanding the knowledge on Applied Chemistry	Comprehension (Level 2)
CO2.	Gaining knowledge in silicate industry, match industry.	Knowledge (Level 1)
CO3.	Using an understanding of the Pollution occurring from various sources and resulting toxic effects	Application (Level 2)
CO4.	Analyzing the dangers involved in Explosives	Analysis (Level 4)
CO5	Solving the problems in day to day life by the gained knowledge in applied chemistry	Synthesis (Level 5)
UCHT51 Organic chemistry II		
CO1.	Understanding the difference of aromatic and aliphatic acids.	Comprehension (Level 2)
CO2.	Identifying the nitrogen containing compounds.	Analysis (level 4)
CO3.	Gaining knowledge of carbohydrates and its types.	Knowledge (Level 1)
CO4.	Evaluate the structure of starch and cellulose	Evaluation (level 5)
CO5	Applying the importance of aromaticity to the organic compounds	Application (Level 3)
UCHT52 Inorganic Chemistry II		
CO1.	Predicting the types of isomers in coordination compounds	Analysis (Level 3)
CO2.	Assessing the name of coordination compounds and to be able to draw the structure based on its name	Evaluation (Level 5)
CO3.	Gaining knowledge of various metal ions present in Our body	Knowledge (Level 1)
CO4.	Understanding the concept of nuclear chemistry and radiation chemistry	Comprehension(Level2)
CO5	Identifying the difference between the nuclear fission, fusion process.	Analysis (Level 4)
UCHT53 Physical Chemistry - I		
CO1.	Understanding the statistical thermodynamics.	Comprehension (Level 2)
CO2.	Analysing the third law of thermodynamics and concept of fugacity and activity.	Analysis (Level 4)
CO3.	Gaining knowledge of concept of thermodynamic probability	Knowledge (Level1)

CO4.	Deriving the kinetics of different types of reaction.	Creation (Level 6)
CO5	Applying the reaction rate theories and reaction in solution.	Application (Level 3)
UCHT54 Analytical Chemistry		
CO1.	Applying the knowledge of good laboratory practices and its applications.	Application (Level 3)
CO2.	Predicting the error and learn minimization of errors.	Analysis (Level 4)
CO3.	Understanding the separation and identification of compounds by chromatographic methods.	Comprehension (Level 2)
CO4.	Deriving the electroanalytical techniques	Creation (Level 6)
CO5	Understanding the advanced methods of separation and analysis	Comprehension (Level 2)
UCHT55 Spectroscopy		
CO1.	Applying various analytical techniques to drug analysis and control, e.g. spectroscopic, chromatographic, etc	Application (Level 3)
CO2.	Assessing the various analytical methods to purity of formulations	Evaluation (Level 5)
CO3.	Gaining understanding of and skills in advanced methods of separation and analysis	Comprehension (Level 2)
CO4.	Predicting practical experience in selected instrumental methods of analysis	Application (Level 3)
CO5	Activating the skills in the scientific method of planning, developing, conducting, reviewing and reporting experiments	Synthesis (Level 6)
UCHE53 Polymer Chemistry		
CO1.	Evaluating areas of fundamental concepts of polymer chemistry	Evaluation (Level 5)
CO2.	Assessing the nomenclature of polymer, degree, types, mechanism and kinetics of polymerization and characterization of polymer	Evaluation (Level 5)
CO3.	Understanding the chain growth and step growth polymerization and preparation, property uses of some industrially important polymers	Comprehension (Level 2)
CO4.	Describing the morphology, structure and physical properties of polymers.	Analysis (Level 4)
CO5	Analysing the different polymer processing techniques	Analysis (Level 4)
UCHS53 Everyday Chemistry		
CO1.	Understanding the chemistry in milk and milk products	Comprehension (Level 2)
CO2.	Gaining knowledge about safety matches and their composition	Knowledge (Level 1)
CO3.	Assessing the preparation of wax products	Evaluation (Level 5)
CO4.	Predicting the application of chemistry in every day of life	Application (Level 3)
CO5	Evaluating the use of food chemistry	Evaluation (Level 5)
UCHT61 Organic Chemistry III		
CO1.	Assessing the NMR Spectroscopy and brief discussion of Fourier transform resonance Spectroscopy	Evaluation (Level 5)
CO2.	Evaluating the properties and structure of Heterocyclic compounds	Evaluation (Level 5)

CO3.	Identifying the naming reaction	Analysis (Level 4)
CO4.	Doing the basic classification and role of alkaloids and to learn the structural elucidation and degradation of alkaloids	Application (Level 3)
CO5	Understanding the terpenoids and its classification	Comprehension (Level 2)
UCHT62 Physical Chemistry II		
CO1.	Understanding the concept of Ionic activity and Ionic strength	Comprehension (Level 2)
CO2.	Deriving Nernst equation and redox system	Analysis (Level 4)
CO3.	Gaining knowledge of Laws of photochemistry	Knowledge (Level 1)
CO4.	Analysing Photochemical excitation and Jablonski diagram	Analysis (Level 4)
CO5	Evaluating the f Debye Huckel rule, limitations and its applications	Evaluation (Level 5)
UCHT63 Industrial Chemistry		
CO1.	Gaining knowledge on fertilizer and their types	Knowledge (Level 1)
CO2.	Understanding the manufacture and types of paints	Comprehension (Level 2)
CO3.	Assessing the process of corrosion and their prevention	Evaluation (Level 5)
CO4.	Describing the raw material and preparation of match boxes.	Analysis (Level 4)
CO5	Applying the knowledge to photography	Application (Level 3)
UCHP63 Physical Chemistry Experiments		
CO1.	Assessing thermodynamics of simple systems	Evaluation (Level 5)
CO2.	Designing and performing experiments to determine the rate, order, and activation energy of chemical reactions by varying concentrations and/or temperature	Synthesis (Level 6)
CO3.	Understanding the safety requirements and lab skills to perform physico-chemical experiments	Comprehension (Level 2)
CO4.	Analyzing the dissociation constant and solubility product by conductometry and potentiometry respectively	Analysis (Level 4)
CO5	Demonstrating the practical working out of chemical processes and reactions to the public	Synthesis (Level 6)
UCHP64 Gravimetric Estimation & Organic Preparation		
CO1.	Gaining knowledge on the volumetric and gravimetric analysis of cations and anions.	Knowledge (Level 1)
CO2.	Applying the results of scientific experiments in oral reports and written reports to the life	Application (Level 3)
CO3.	Predicting the outcome and mechanism of some simple organic reactions, using a basic understanding of the relative reactivity of functional groups	Evaluation (Level 5)
CO4.	Understanding technical literature related to the discipline	Comprehension (Level 2)
CO5	Assessing to maintain high standards of professional and scientific ethics	Evaluation (Level 5)
UCHE64 Nano science and Technology		
CO1.	Gaining knowledge on the definition of a nano system and the basic concepts of nanoscience and	Knowledge (Level 1)

	technology	
CO2.	Understanding the scientific revolutions of nanotechnology	Comprehension (Level 2)
CO3.	Comprehending the concepts of nanoscience and technology and commercial applications of Nanotechnology	Comprehension (Level 2)
CO4.	Predicting the Classification of nanostructures, size dependency in nanostructures and quantum size effects in nanostructures	Evaluation (Level 5)
CO5	Evaluating the study of Applications of metal nanoparticles in technologically imperative fields	Evaluation (Level 5)
UHS64 Textile Chemistry		
CO1.	Gaining knowledge on basic printing Process	Knowledge (Level 1)
CO2.	Understanding the pre-treatment of dying	Comprehension (Level 2)
CO3.	Applying Printing technique to textile process	Application (Level 3)
CO4.	Predicting the Classification of fibres	Evaluation (Level 5)
CO5	Evaluating the study of Applications of printing	Evaluation (Level 5)
M.Sc., CHEMISTRY		
M.Sc., (Chemistry) / PCH23 / PROGRAMMES OUTCOMES		
POs	Description of POs	
PO1	Understanding the application of the classical subjects in modern Chemistry and master factual and experimental knowledge across the principal areas of Chemistry	
PO2	Demonstrating competence in solving industrial scientific problems through experimental, computational and/or data analysis models	
PO3	Involving in deeper learning of the principles of Organic, Inorganic and Physical Chemistry	
PO4	Learning modern analytical and spectroscopic tools and their applications to different disciplines of Chemistry	
PO5	Designing and conducting experiments as well as to analyze and interpret the data	
PO6	Learning the interdisciplinary nature of chemistry and to integrate the knowledge with a variety of chemical problems	
PO7	Learning, designing and demonstrating sustainable industrial reactions within realistic constraints such as economic, environmental, social, ethical, health, safety and productivity	
M.Sc., (Chemistry) / PCH23 / COURSE OUTCOMES		
	Course Outcomes	Bloom's Taxonomy / Cognitive Domain
PCST11 Organic Chemistry I		
CO1.	Identifying the different types of reactive intermediates and appreciating their importance in organic reactions	Application (Level 3)
CO2.	Identifying aromatic, non-aromatic and anti-aromatic compounds	Knowledge (Level 1)
CO3.	Understanding the various mechanisms of organic reactions	Comprehension (Level 2)

CO4.	Understanding and apply the concepts of stereochemistry	Comprehension (Level 2)
CO5	Appreciating the importance of different types of reactive intermediates in organic reactions.	Synthesis (Level 6)
PCST12 Inorganic Chemistry I		
CO1.	Predicting the Chemistry theories involved and structure of ionic compounds	Comprehension (Level 2)
CO2.	Assessing the types of hybridization involved in ionic solids	Evaluation (Level 5)
CO3.	Identifying the type of crystal structure exist in ionic solids	Comprehension (Level 2)
CO4.	Describing the type of defects in metals, and solid state reaction	Evaluation (Level 5)
CO5	Applying different electron counting rules to predict the shape/geometry of Interhalogens and polymeric Inorganic compounds	Application (Level 3)
PCST13 Physical Chemistry I		
CO1.	Understanding the concept of distribution and chemical kinetics, uses of Hammett equation.	Understanding (Level 2)
CO2.	Evaluating most probable distribution state for all type of statistics i.e. for Maxwell Boltzmann, Fermi Dirac and Bose –Einstein statistics.	Evaluation (Level 5)
CO3.	Analyzing the concept of strong and weak electrolyte, Debye-Hückel rules.	Analysis (Level 4)
CO4	Applying the concepts of photochemistry and laws	Application (Level 3)
CO5	Deriving the concept of Gibbs' Duhem rule, Nernst equation, laws of thermodynamics	Creation (Level 6)
PCSP11 Organic Chemistry		
CO1.	Learning simple extraction techniques	Knowledge (Level 1)
CO2.	Understanding basic chromatographic methods.	Comprehension (Level 2)
CO3.	Understanding and develop the principles of quantitative and qualitative analysis of organic compounds.	Comprehension (Level 2)
CO4.	Developing skill in simple organic synthesis	Synthesis (Level 6)
CO5	Developing the principles of quantitative and qualitative analysis of organic compounds.	Synthesis (Level 6)
PCSE11 Medicinal Chemistry and Drug Design		
CO1.	Analyzing the effect of different drugs	Analysis (Level 4)
CO2.	Describing the mechanism of different DFT	Understanding (Level 2)
CO3.	Finding drugs present in different Pharmaceutical compounds	Analysis (Level 4)
CO4.	Applying the concept of molecular modeling and drug design in research fields.	Application (Level 3)
CO5	Designing the bio-inorganic compounds in medicine in future research work.	Creation (Level 6)
PCSE11 Organic Chemistry II		
CO1.	Gaining knowledge and understanding of the various reagents in organic synthesis and important oxidation and reduction reactions.	Knowledge (Level 1)
CO2.	Understanding and applying the various reagents in organic synthesis and design organic synthetic reactions.	Understanding (Level 2)

CO3.	Evaluating the stability of various conformers of acyclic and cyclic systems using steric, electronic and stereoelectronic effects and correlate them to reactivity.	Evaluation (Level 5)
CO4.	Applying asymmetric transformations in a logical manner for the synthesis of chiral molecules	Application (Level 3)
CO5	Using various models for determining stereo selectivity of various organic transformation	Synthesis (Level 6)
PCST21 Inorganic Chemistry II		
CO1.	Understanding and explaining crystal field theory, crystal field splitting in complexes, its limitations,	Understanding (Level 2)
CO2.	Deriving the Orgel and Tanabe ,Sugano diagram ,effect of Jahn – Teller distortion and spin-orbit coupling on absorption spectra	Creation (Level 6)
CO3.	Analysing and categorizing the mechanical aspects of organometallic complexes	Analysis (Level 4)
CO4.	Describing trans effect, theories of trans effect and redox reactions	Understanding (Level 2)
CO5	Applying the interpretation the electronic spectra of coordination complexes.	Application (Level 3)
PCST22 Inorganic Chemistry II		
CO1.	Appreciating and analyzing the importance of the reactions in surface and catalysis.	Analysis (Level4)
CO2.	Evaluating commutation relation between total orbital angular momentum operator and its components.	Evaluation (Level5)
CO3.	Applying the uses of polymer chemistry in future studies	Application (Level 3)
CO4.	Using mathematical techniques in linear algebra for eigen values and eigen vectors and first and second order differential equations in quantum chemistry and in physical and theoretical chemistry	Application (Level 3)
CO5	Solving all the model problems in quantum mechanics for which exact analytical methods	Creation (Level 6)
PCST23 Inorganic chemistry Practical		
CO1.	Estimating the metals and alloys by using quantitative methods	Analysis (Level 4)
CO2.	Analyzing the ores and pharmaceutical preparations quantitatively.	Analysis (Level 4)
CO3.	Presenting scientific and technical information resulting from laboratory experimentation in both written and oral formats.	Creation (Level 6)
CO4.	Working effectively and safely in laboratory environment	Creation (Level 6)
CO5	Applying the skills in future studies	Application (Level 3)
PCSP22 Analytical technique		
CO1.	Solving problems based on various analytical concepts	Creation (Level 6)
CO2.	Designing experiments with improved sample preparation, new measurement procedures and tools	Creation (Level 6)
CO3.	Quantifying analytes with proper data handling and analysis	Analysis (Level 4)
CO4.	Evaluating thermo analytical technique	Evaluation (Level 5)
CO5	Using the electro-analytical studies for research	Application (Level 3)
PCSE22 Organic Chemistry II		
CO1.	Applying the effect of structure on chemical shift and coupling constants.	Application (Level 3)

CO2.	Constructing splitting diagrams and be able to measure coupling constants, and NMR spectrum, or predict coupling constants	Creation (Level 6)
CO3.	Describing and explaining photochemical and photophysical processes using Norrish, Butternut Puchi diagram and their quantum yield expressions	Comprehension (Level 2)
CO4.	Recognizing and know how to test for exchangeable hydrogens in a molecule.	Knowledge (Level 1)
CO5	Deducing unknown structures and fully assign an IR spectrum to the structure.	Analysis (Level 4)
PCSE22 Inorganic Chemistry II		
CO1.	Applying NMR, IR, MS, UV-Vis spectroscopic techniques in solving structure of organic molecules and in determination of their stereochemistry.	Application (Level 3)
CO2.	Evaluating the concept of inorganic photochemistry	Evaluation (Level 5)
CO3.	Using these spectroscopic techniques in their research	Application (Level 3)
CO4.	Elucidating the structure of simple molecule by using Infrared spectra	Creation (Level 6)
CO5	Describing the spectral concepts of ^1H , ^{19}F , ^{31}P , ^{13}C interpretation and applications and their bonding patterns	Comprehension (Level 2)
PCST31 Physical Chemistry III		
CO1.	Evaluating the concept of vibrating, rotating spectra.	Evaluation (Level 5)
CO2.	Describing the basic theory of Nuclear Magnetic Resonance (NMR) Spectroscopy	Comprehension (Level 2)
CO3.	Applying the basic principles and application of Electron spin resonance (ESR) spectroscopy for the structural elucidation of compounds.	Application (Level 3)
CO4.	Determining the vibrations for a triatomic molecule and identify whether they are infrared-active.	Analysis (Level 4)
CO5	Calculating the symmetry elements and symmetry operations, point groups and character table	Creation (Level 6)
PCST32 Physical chemistry Practicals		
CO1.	Setting up of different electrochemical cells	Creation (Level 6)
CO2.	Analyzing the dissociation constant and solubility product by conductometry and potentiometry respectively	Analysis (Level 4)
CO3.	Identifying the thermodynamics of simple systems	Analysis (Level 4)
CO4.	Assessing and adopting the conductometric methods to verify the theories	Application (Level 3)
CO5	Demonstrating the practical to others	Creation (Level 6)
PCST33 Environmental Chemistry and Green Chemistry		
CO1.	Analyzing the effect of Pollution and its prevention measures	Analysis (Level 4)
CO2.	Designing the bio-catalytic reactions	Creation (Level 6)
CO3.	Exploring the causes of global warming and its effects	Analysis (Level 4)

CO2.	Identifying the needs for Research	Comprehension (Level 2)
CO3.	Becoming well versed in the mechanics of thesis writing.	Application and Analysis (Level K3 and Level K4)
CO4.	Applying the correct methodology in research writing.	Application (Level 3)
CO5	Developing skills to locate, evaluate, and incorporate relevant source	Synthesis (Level 6)
MCST12 Advances in Chemistry		
CO1.	Gaining knowledge of advanced concepts of physical, organic and inorganic chemistry	Knowledge (Level K1)
CO2.	Identifying the twelve principles of green chemistry	Comprehension (Level 2)
CO3.	Applying and analyzing the basic principles of Fluorescence Spectroscopy	Application and Analysis (Level K3 and Level K4)
CO4.	Getting familiarity with the physical and structural methods of Chemistry	Synthesis (Level 6)
MCST13 Professional Skills		
CO1.	Acquiring knowledge of communication skills with special reference to its elements, types, development and styles.	Knowledge (Level 1)
CO2.	Understanding the terms like Communication technology, Computer Mediated Teaching	Comprehension (Level 2)
CO3.	Developing skills in ICT and applying them in teaching, learning contexts and research.	Synthesis (Level 6)
CO4.	Developing Multimedia/E-contents in their respective subjects.	Synthesis (Level 6)
CO5	Integrating Technology into Teaching and Learning	Synthesis (Level 6)