B.Sc. Chemistry
Expected Programme Outcome

PO No.	Upon completion of B.Sc. Degree programme, the graduates will be able to:
PO-1	Apply the acquired knowledge of Chemistry, Mathematics, Physics Bio-Chemistry and computing to give solutions to various problems of the contemporary world.
PO-2	Perform analysis to assess, interpret and create innovative ideas through practical experiments.
PO-3	Combine the interdisciplinary knowledge and skills acquired through Generic Elective / Ability or Skill Enhancement courses to solve day-to-day scientific problems.
PO-4	Carry out fieldworks and projects, both independently and in collaboration with others, and to report in a constructive way.
PO-5	Practice the life skills, communication skills, both written and oral acquired by the value added courses.
PO-6	Involve in various co-curricular / extra-curricular activities and be aware of social values and environmental issues.
PO-7	Use the knowledge of computer and ICT skills for communication and knowledge dissemination.

Expected Programme Specific Outcome

PSO No	Upon completion of B.Sc. Chemistry Degree programme, the graduates will be able to:	PO Mapped
PSO-1	Demonstrate knowledge of theoretical, Physical, Organic and Inorganic Chemistry and apply knowledge to analyze a variety of chemical problems	PO-1
PSO-2	Utilize laboratory skills to carry out reactions in a Chemical laboratory, analyze the reactions and draw valid conclusions.	PO-2
PSO-3	Compile oral and written scientific communication and will prove that they can think critically and work independently.	PO-4
PSO-4	Design, set up and carryout experiments, infer data, account for errors and compare with theoretical predictions.	PO-4
PSO-5	Utilize their knowledge about green and nano-chemistry and energy sources to solve the present day energy crisis	PO-6
PSO-6	Acquire problem solving skills in all basic chemistry topics and can attend competitive exams with ease.	PO-3
PSO-7	Exhibit increased confidence levels with improved overall well-being and soft skills through foundation courses such as Yoga and meditation, Personality development, Value based Education and self study papers through NPTEL courses	PO-5

PART III - CORE, CORE ELECTIVE & PROJECT			
I SEMESTER			
DSC 1	**GENERAL CHEMISTRY**		**18UCCH11**
Hrs/Week: 4	**Hrs / Sem: 60**	**Hrs / Unit: 12**	**Credit: 4**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive level
CO-1	State the characteristics of modern periodic table and properties.	PSO1, PSO6	Remembering, Understanding
CO-2	Discuss the basic concepts of atomic structure from wave mechanical concept.	PSO1, PSO2	Remembering, Understanding
CO-3	Explain modern approach of chemical bonding.	PSO1, PSO2	Remembering, Understanding
CO-4	Understand the shapes and structure of important compounds	PSO3	Applying
CO-5	Demonstrate the chemical reactions on the basis of oxidation, reduction and electron transfer	PSO1, PSO6	Remembering, Applying

I SEMESTER			
DSC 2	**INORGANIC CHEMISTRY – I**		**18UCCH12**
Hrs / Week: 4	**Hrs / Sem: 60**	**Hrs / Unit: 12**	**Credit: 4**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive Level
CO-1	Understand the principles of acids and bases	PSO2	Understanding
CO-2	Explain the reactions in inorganic solvents	PSO1, PSO2	Remembering, Understanding
CO-3	Discuss the characteristics of s-block elements and their compounds	PSO1, PSO3	Understanding, Applying
CO-4	Elaborate the concepts of hydrogen , Oxygen and their compounds	PSO2, PSO3	Understanding, Applying
CO-5	Understand the characteristics of p-block elements and their compounds	PSO2, PSO3	Understanding, Applying

PART III - ALLIED - I - BIOCHEMISTRY			
I SEMESTER			
AI - Allied-1	**CARBOHYDRATES AND NUCLEIC ACIDS**		**18UABC11**
Hrs / Week: 4	**Hrs / Sem: 15x4=60**	**Hrs / Unit: 12**	**Credit: 3**

CO no.	Upon completion of this course, students will be able to learn the definition, classification	PSO addressed	Cognitive level
CO-1	Learn the definition, Classification of carbohydrates and the structures of Monosaccharides.	PSO1	Understanding
CO-2	Explain the properties of Di and Polysaccharides.	PSO1	Understanding
CO-3	Understand the reactions due to amino acids in biochemical reactions.	PSO1	Understanding
CO-4	Illustrate the functions and Physiological role of lipids.	PSO1	Understanding
CO-5	Outline the structures, types and functions of Nucleic acids.	PSO1, PSO6	Understanding, Applying

I SEMESTER		
DSCP I	**INORGANIC QUANTITATIVE ANALYSIS**	**18UCCH1P1**
Hrs / Week: 2	**Hrs / Sem: 15 x 3 = 45**	**Credit: 1**

*** Examination at the end of I Semester**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive level
CO-1	understand the concept of primary standard & link solution indicator for Acidimetry, Alkalimetry, Permanganometry, Iodometry & Dichrometry.	PSO2	Understanding
CO-2	Choose the appropriate indicator for Acidimetry, Alkalimetry, Permanganometry, Iodometry & Dichrometry.	PSO2, PSO3	Understanding, Applying
CO-3	Estimate H_2SO_4, NaOH, Na_2CO_3 & $NaHCO_3$, Sodium Oxalate and Ferrous ion and copper ferrous ion by using volumetric Methods.	PSO2, PSO3, PSO4	Understanding, Applying, Analyzing.
CO-4	Apply the concepts of Acidimetry & Alkalimetry in the estimation of Commercial Vinegar.	PSO2, PSO3	Understanding, Applying
CO-5	Apply the concepts of Permanganometry in estimation of H_2O_2.	PSO2, PSO3	Understanding, Applying

I SEMESTER		
AI-P-1	**ANALYSIS OF BIOMOLECULES - I**	**18UABC1P1**
Hrs / Week: 2	**Hrs / Sem: 30**	**Credit: 1**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive level
CO-1	Identify the Carobohydrates and demonstrate the classification of carbohydrates	PSO2, PSO3	Understanding, Applying
CO-2	Analyse Mono, Di & Polysaccharides.	PSO2	Understanding
CO-3	Identify the different Monosaccharides using Chromatographic Methods.	PSO2, PSO3, PSO4	Understanding, Applying, Analyzing
CO-4	Estimate ascorbic acid by volumetric estimation.	PSO2, PSO3, PSO4,PSO5	Understanding, Applying, Analyzing, Evaluating.
CO-5	Estimate the acid number, Saponification Number & Iodine Number of Oil.	PSO2, PSO3, PSO4,PSO5	Understanding, Applying, Analyzing, Evaluating

II SEMESTER			
DSC 3	**ORGANIC CHEMISTRY - I**		**18UCCH21**
Hrs / Week: 4	**Hrs / Sem: 60**	**Hrs / Unit: 12**	**Credit: 4**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive level
CO-1	Understand the important concepts of naming organic compounds and various types of organic reactions.	PSO2	Understanding
CO-2	Determine the reaction intermediates and the basic concepts of organic chemistry.	PSO2	Understanding
CO-3	Appraise the synthetic and industrial applications of active methylene compounds	PSO2, PSO6	Understanding, Evaluating
CO-4	Explain the prepartion and synthetic applications of important organic compounds	PSO2	Understanding
CO-5	Discuss the stability of cyclo alkanes and the aromaticity of organic compounds	PSO2, PSO3, PSO6	Understanding, Applying, Creating

II SEMESTER			
DSC4	**METHODOLOGY OF PRACTICALS**		**18UCCH22**
Hrs / Week: 4	**Hrs / Sem: 60**	**Hrs / Unit: 12**	**Credit: 4**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive level
CO-1	Understand the basic apparatus used in chemistry laboratory and their calibration	PSO1	Remembering
CO-2	Recall the principles used in the inorganic qualitative analysis	PSO1, PSO4	Remembering, Analyzing
CO-3	Apply the principles and idea about the volumetric analysis	PSO1, PSO2	Remembering, Understanding
CO-4	Outline the principles and idea about the gravimetric analysis	PSO2, PSO3	Understanding, Applying
CO-5	Understand the principles about the qualitative organic analysis.	PSO2, PSO3	Understanding, Applying

II SEMESTER			
AI- Allied 2	**METABOLISM AND ENZYMES**		**18UACH21**
Hrs / Week: 4	**Hrs / Sem: 60**	**Hrs / Unit: 12**	**Credit: 3**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive level
CO-1	Understand basic concepts of metabolism.	PSO2	Understanding
CO-2	Assimilate the concepts of carbohydrate metabolism.	PSO2	Understanding
CO-3	Elaborate upon the metabolism of aminoacids	PSO2, PSO4	Understanding, Analyzing
CO-4	Understand the mechanism of lipids metabolism	PSO2	Understanding
CO-5	Determine the concepts and Functionality of metabolism of enzymes	PSO1, PSO4	Remembering, Analyzing

II SEMESTER		
DSCP II	**INORGANIC QUANTITATIVE ANALYSIS AND ORGANIC ESTIMATIONS**	**18UCCH2P1**
Hrs / Week: 3	**Hrs / Sem: 45**	**Credit: 1**

*** Examination at the end of II Semester**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive level
CO-1	Understand the concepts of Complexometric Titration.	PSO2	Understanding
CO-2	Get an idea about the estimation of organic compounds.	PSO2	Understanding
CO-3	Apply the concepts of Molarity and Buffer Solution for Quantitative Analysis	PSO2, PSO3	Understanding, Applying
CO-4	Estimate Zn, Ca, Mg, Mn, Al, Cu & Ba by using Complexometric Titration.	PSO2	Understanding
CO-5	Estimate Phenol, Aniline and Glucose by Winkler's and Bertrand's Methods respectively.	PSO2 PSO3, PSO5	Understanding, Applying, Evaluating

II SEMESTER		
I-A P-2	**ANALYSIS OF BIOMOLECULES - II**	**18UABC2P1**
Hrs / Week: 2	**Hrs / Sem: 30**	**Credit: 1**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive level
CO-1	Identify Amino acid by Ninhydrin Test and Analyze various aminoacids.	PSO2, PSO4	Understanding, Analyzing
CO-2	Identify arginine using Chromatographic method.	PSO2, PSO4	Understanding, Analyzing
CO-3	Estimate glycine by formal titration method.	PSO2, PSO5	Understanding, Evaluating
CO-4	Estimate Protein by Calorimetric method.	PSO2 PSO4	Understanding, Analyzing
CO-5	Determine the Protein content in Milk by Kjheldal method.	PSO2, PSO3, PSO4	Understanding, Applying, Analyzing

III SEMESTER			
DSC5	**PHYSICAL CHEMISTRY - I**		**18UCCH31**
Hrs / Week: 4	**Hrs / Sem: 60**	**Hrs / Unit: 12**	**Credit: 4**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive level
CO-1	Explain the behaviour of molecules in gaseous state.	PSO2	Understanding
CO-2	Classify the structure of solids and Liquid crystals.	PSO2, PSO3	Understanding, Applying
CO-3	Learn about the reactions on a surface and colloids.	PSO2	Understanding
CO-4	Know about the nuclear stability and nuclear reaction.	PSO2	Understanding
CO-5	Observe the concept and applications of nuclear reactions.	PSO2	Understanding

III SEMESTER			
DSE 1A	**POLYMER CHEMISTRY**		**18UECH3A**
Hrs / Week: 4	**Hrs / Sem: 60**	**Hrs / Unit: 12**	**Credit: 4**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive level
CO-1	Understand the different types and the characteristics of polymer.	PSO2	Understanding
CO-2	Illustrate the methods of polymerization and synthesis of some polymers.	PSO2, PSO3	Understanding, Applying
CO-3	Interpret the synthesis and applications of synthetic polymers.	PSO2	Understanding
CO-4	Explain the characteristics and biomedical applications of polymers	PSO2	Understanding
CO-5	Propose the idea about polymer processing.	PSO1	Remembering

III SEMESTER			
DSE 1B	**MATERIAL SCIENCE**		**18UECH3B**
Hrs / Week: 3	**Hrs / Sem: 45**	**Hrs / Unit:9**	**Credit: 4**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive level
CO-1	Illustrate the ionic conductivity and solid electrolyte.	PSO2, PSO3	Understanding, Applying
CO-2	Explain the importance of alloys in material chemistry	PSO4	Analyzing
CO-3	Illustrate the properties and applications of glass, ceramics and composites.	PSO2, PSO3	Understanding, Applying
CO-4	Identify the important properties and applications of polymers.	PSO4, PSO5	Analyzing, Evaluating
CO-5	Understand the processing of polymers	PSO2, PSO3	Understanding, Applying

PART III - ALLIED II – CHEMISTRY (Offered by Chemistry Department to Physics Students)			
III SEMESTER			
AII Allied 1	**ALLIED CHEMISTRY - I**		**18UACH31**
Hrs / Week: 4	**Hrs / Sem: 60**	**Hrs / Unit: 12**	**Credit: 3**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive level
CO-1	Understand the principles of electrochemical reactions.	PSO2	Understanding
CO-2	Examine the chemical kinetics and photochemistry.	PSO2	Understanding
CO-3	Illustrate the principles of Qualitative and Quantitative analysis of chemical compounds.	PSO2, PSO4	Understanding, Analyzing
CO-4	Explain the basic methods of solutions.	PSO1	Remembering
CO-5	Study about lubricants, their classification and preparation of home needs namely shampoo, nail polish, chalk piece & etc.	PSO1	Remembering

III SEMESTER		
DSCP 3	**INORGANIC QUALITATIVE ANALYSIS OF SIMPLE SALT & INORGANIC PREPARATION**	**18UCCH3P1**
Hrs / Week: 3	**Hrs / Sem: 45**	**Credit: 1**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive level
CO-1	Understand the systematic Analysis Inorganic qualitative analysis.	PSO2	Understanding
CO-2	Differentiate cations & anions.	PSO4	Analyzing
CO-3	Identify specific cations by conducting flame test.	PSO4, PSO5	Analyzing, Evaluating
CO-4	Determine cations & anions by specific test	PSO4	Analyzing
CO-5	Prepare various inorganic complexes	PSO6	Creating

III SEMESTER		
AII P-1	**INORGANIC QUALITATIVE ANALYSIS (Examination at the end of III Semester)**	**18UACH3P1**
Hrs / Week: 2	**Hrs / Sem: 30**	**Credit: 1**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive level
CO-1	Understand the systematic analysis of Inorganic qualitative analysis.	PSO2	Understanding
CO-2	Classify the cations & anions present in the simple salt.	PSO2	Understanding
CO-3	Understand importance of Sodium Carbonate Extract.	PSO2	Understanding
CO-4	Classify the cations under the respective group.	PSO2, PSO3	Understanding, Applying
CO-5	Identify specific cations & anions by conducting appropriates test.	PSO2, PSO4, PSO5	Understanding, Analyzing, Evaluating

III SEMESTER Part IV - Non Major Elective			
NME 1	**WATER MANAGEMENT**		**18UNCH31**
Hrs / Week: 4	**Hrs / Sem: 60**	**Hrs / Unit: 12**	**Credit:2**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive level
CO-1	Analyse water pollution and its causes.	PSO4	Analyzing
CO-2	Estimate water quality parameters.	PSO1, PSO5	Remembering, Evaluating
CO-3	Sketch various techniques involved in water purification.	PSO4, PSO5	Analyzing, Evaluating
CO-4	Find out the process and methods of waste water treatment.	PSO2, PSO4	Understanding, Analyzing
CO-5	Illustrate water restoration and management.	PSO6	Creating

IV SEMESTER			
DSC 6	**INORGANIC CHEMISTRY - II**		**18UCCH41**
Hrs / Week: 4	**Hrs / Sem: 60**	**Hrs / Unit: 12**	**Credit: 4**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive level
CO-1	Explain the principles and metallurgical processes.	PSO4	Analyzing
CO-2	Assimilate the characteristics of d-block elements.	PSO4	Analyzing
CO-3	Examine characteristics of coinage metals and their compounds.	PSO2	Understanding
CO-4	Understand the characteristics of inner-transition elements and their compounds.	PSO2	Understanding
CO-5	Distinguish the properties and explain the preparation methods of Inorganic Polymers.	PSO3, PSO4	Applying, Analyzing

IV SEMESTER			
DSE 2A	**CHROMATOGRAPHY**		**18UECH4A**
Hrs / Week: 4	**Hrs / Sem: 60**	**Hrs / Unit: 12**	**Credit: 4**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive level
CO-1	Define Chromatography and their types	PSO2	Understanding
CO-2	Understand the principle the factors and the values related to Chromatography and its applications.	PSO2, PSO3	Understanding, Applying
CO-3	Study the thin - layer chromatography and its applications.	PSO2	Understanding
CO-4	Learn the principle of Ion Exchange and techniques involved in its applications.	PSO2, PSO4	Understanding, Analyzing
CO-5	Analyze the concepts of instrumentation & the types of HPLC	PSO2, PSO4	Understanding, Analyzing

IV SEMESTER			
DSE 2B	**DAIRY CHEMISTRY**		**18UECH4B**
Hrs / Week: 3	**Hrs / Sem: 45**	**Hrs / Unit: 9**	**Credit: 4**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive level
CO-1	Explain the properties of milk.	PSO2	Understanding
CO-2	Understand the microbiological processing of milk.	PSO2	Understanding
CO-3	Study the varied processes in producing different forms of milk.	PSO2	Understanding
CO-4	Be Knowledgeable about the different kinds of milk products.	PSO2	Understanding
CO-5	Evaluate the nutrient values of milk and milk products.	PSO5	Evaluating

PART III - ALLIED II – CHEMISTRY (Offered by Chemistry Department to Physics Students)			
IV SEMESTER			
AII Allied 2	**ALLIED CHEMISTRY - II**		**18UACH41**
Hrs / Week: 4	**Hrs / Sem: 60**	**Hrs / Unit: 12**	**Credit: 3**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive level
CO-1	Identify petroleum purification and preparation of fertilizers.	PSO2	Understanding
CO-2	Demonstrate the preparation of detergents and pesticide and their uses.	PSO2, PSO3	Understanding, Applying
CO-3	Explain the preparation and uses pharmaceutical drugs.	PSO3, PSO5	Applying, Evaluating
CO-4	Understand about polymers and their advantages.	PSO2	Understanding
CO-5	Describe the various physical properties of molecules and chromatographic techniques.	PSO2, PSO4	Understanding, Analyzing

IV SEMESTER		
DSCP4	**INORGANIC QUALITATIVE ANALYSIS OF MIXTURE**	**18UCCH4P1**
Hrs / Week: 3	**Hrs / Sem: 45**	**Credit: 1**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive level
CO-1	Distinguish inorganic mixture, inorganic double salts and complex.	PSO2	Understanding
CO-2	Identify the interfering anions	PSO2	Understanding
CO-3	Explain the different types of elimination of Interfering anions.	PSO2, PSO4, PSO5	Understanding, Analyzing, Evaluating
CO-4	Classify the cations under respective group	PSO2, PSO4	Understanding, Analyzing
CO-5	Identify specific cations by conducting specific test	PSO2, PSO4, PSO6	Understanding, Analyzing, Creating

IV SEMESTER		
AII P-2	**INORGANIC QUANTITAIVE ANALYSIS** **(Examination at the end of IV Semester)**	**18UACH4P1**
Hrs / Week: 2	**Hrs / Sem: 30**	**Credit: 1**

CO no.	**Upon completion of this course, students will be able to**	**PSO addressed**	**Cognitive level**
CO-1	Understand the concepts of Normality, Molarity, and primary standard solution.	PSO1, PSO2	Remembering, Understanding
CO-2	Get an idea about estimation of Inorganic compounds.	PSO2	Understanding
CO-3	Estimate NaOH, H_2SO_4, Ferrous ion, Oxalic acid, Sodium Oxalate, Zn & Mg by volumemetric method.	PSO4, PSO5	Analyzing, Evaluating
CO-4	Illustrate the concepts of Alkalimetry, Acidimetry and Permanganometry.	PSO4, PSO5	Analyzing, Evaluating
CO-5	Applied the concepts of complexometry.	PSO5	Evaluating

IV SEMESTER Part IV - Non Major Elective			
NME 2	**CHEMISTRY IN EVERYDAY LIFE**		**18UNCH41**
Hrs / Week: 2	**Hrs / Sem: 30**	**Hrs / Unit: 6**	**Credit: 2**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive level
CO-1	Understand the methods and processes of making soaps and Detergents.	PSO2	Understanding
CO-2	Define the characteristics the fertilizer and know about its advantages.	PSO2	Understanding
CO-3	Distinguish basic study fibres, resins, plastics and rubber.	PSO2	Understanding
CO-4	Understand the therapeutic value of useful drugs for common uses.	PSO2	Understanding
CO-5	Learn to prepare household items such as tooth paste, writing inks, talcum powder, boot polish etc.	PSO2, PSO6	Understanding, Creating

V SEMESTER			
DSC 7	**Physical Chemistry - II**		**18UCCH51**
Hrs / Week: 6	**Hrs / Sem: 90**	**Hrs / Unit: 18**	**Credit: 4**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive Level
CO-1	Understand the basic concepts of thermodynamics	PSO-1	Understanding
CO-2	Predict the entropy changes in various processes	PSO-1, PSO6	Understanding Creating
CO-3	Discuss the applications of thermodynamical properties	PSO-1, PSO-6	Understanding, Creating
CO-4	Illustrate phase rule to one component and two component systems	PSO-1	Understanding
CO-5	Express laws of solutions and its types	PSO-1	Understanding

V SEMESTER			
DSC 8	**Organic Chemistry - II**		**18UCCH52**
Hrs / Week: 5	**Hrs / Sem: 75**	**Hrs / Unit: 15**	**Credit: 4**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive Level
CO-1	Interpret the mechanism and applications of some important name reactions in organic synthesis	PSO-1	Understanding
CO-2	Recognize the structural aspects of organic compounds from stereochemical and conformational analysis	PSO-1	Applying
CO-3	Classify the types of organic reactions based on their reaction mechanism.	PSO-1	Understanding
CO-4	Apply the substitution effects on aromatic compounds	PSO-1, PSO-4	Applying
CO-5	Articulate the synthesis of heterocyclic compounds	PSO-1	Remembering, Understanding

V SEMESTER			
DSC 9	**Inorganic Chemistry - III**		**18UCCH53**
Hrs / Week: 5	**Hrs / Sem: 75**	**Hrs / Unit: 15**	**Credit: 4**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive Level
CO-1	Assimilate the basic concepts of coordination chemistry.	PSO-1	Understanding
CO-2	Construct the molecular orbitals for complexes based on theories.	PSO-1	Creating
CO-3	Predict the stability and summarize the factors affecting the coordination complexes.	PSO-1	Creating
CO-4	Infer the spectral properties of complexes	PSO-1, PSO-4	Evaluating
CO-5	Sketch the importance of the metal ions in biological systems.	PSO-1, PSO-4	Applying

V SEMESTER			
DSE 3A	**Spectroscopy**		**18UECH5A**
Hrs / Week: 4	**Hrs / Sem: 60**	**Hrs / Unit: 15**	**Credit: 4**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive Level
CO-1	Outline the basic principles of spectroscopy	PSO-1	Applying
CO-2	Explain the principle of microwave, IR, Raman, Mass, ESR and Massbauer spectroscopy and its applications	PSO-1	Evaluating
CO-3	Analyze the allowed and forbidden mode of transitions in microwave & IR spectroscopy	PSO-1	Evaluating
CO-4	Elaborate the instrumentation of Raman an Mass spectroscopy	PSO-1, PSO-2	Evaluating
CO-5	Elaborate the electronic, molecular structures and magnetic properties of compounds	PSO-1, PSO-4	Applying, Evaluating

V SEMESTER			
DSE 3B	**Medicinal Chemistry**		**18UECH5B**
Hrs / Week: 4	**Hrs / Sem: 60**	**Hrs / Unit: 15**	**Credit: 4**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive Level
CO-1	Understand the concept of drugs and their chemical reaction pathways in biological conditions.	PSO-1	Understanding
CO-2	Differentiate the day today life medical diagnostic instrument techniques.	PSO-1	Analyzing
CO-3	Determine the various clinical analytical methods.	PSO-1	Evaluating
CO-4	Identify the causes of common diseases and awareness about their treatments.	PSO-1	Applying
CO-5	Infer the important diseases and the side effects of common drugs.	PSO-1	Understanding

V SEMESTER		
DSCP-5	**Gravimetric Analysis & Chromatographic Technique**	**18UCCH5P1**
Hrs / Week: 4 Hrs / Sem: 60		**Credit: 2**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive Level
CO-1	Identify the quantitative estimation of metal from their compounds.	PSO-1	Applying
CO-2	Establish the chemicals required to precipitate the metal ions	PSO-1, PSO-2	Applying, Creating
CO-3	Compute accurately the amount of metal ion present in a compound	PSO-1, PSO-2	Analyzing
CO-4	Facilitate the accurate transfer of a precipitate quantitatively	PSO-1	Creating
CO-5	Identify the mixture of compounds using chromatographic techniques	PSO-1	Applying

V SEMESTER		
DSCP-6	**Preparation of Organic Compounds**	**18UCCH5P2**
Hrs / Week: 4 Hrs / Sem: 60		**Credit: 2**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive Level
CO-1	Prepare the various organic compounds.	PSO-1, PSO-2	Applying
CO-2	Distinguish different types of organic reactions	PSO-1	Analyzing
CO-3	Operate the experimental conditions for setting up a organic reaction	PSO-1, PSO-2	Evaluating
CO-4	Select the required chemicals for a reaction	PSO-1, PSO-2	Applying
CO-5	Adapt green synthesis in organic reactions	PSO-1, PSO-4	Applying

V SEMESTER		
SEC -I	**Industrial Chemistry**	**18USCH51**
Hrs / Week: 2 Hrs / Sem: 30	**Hrs / Unit: 6**	**Credit: 2**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive Level
CO-1	Understand the materials of match industry and the hazards of explosive chemicals.	PSO-1	Understanding
CO-2	Discuss about the importance of soil nutrients and chemical fertilizers for soil enrichment.	PSO-1	Analyzing
CO-3	Explain about the materials and processes involved in the paper and textile industry.	PSO-1, PSO-4	Understanding
CO-4	Outline the various parameters, terminologies and manufacturing process in cement industry.	PSO-1, PSO-2, PSO-4	Understanding
CO-5	Summarize the manufacturing processes of soaps and detergents.	PSO-1, PSO-4	Understanding

VI SEMESTER		
DSC- 10	**Physical Chemistry - III**	**18UCCH61**
Hrs / Week: 5 Hrs / Sem: 75	**Hrs / Unit: 15**	**Credit:4**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive Level
CO-1	Understand the basic concepts of chemical kinetics. Determine the order of a reaction. Describe various theories of reaction rates.	PSO-1	Understanding
CO-2	Discuss the various laws an energy transfer in photochemistry	PSO-1	Creating
CO-3	Explain the various theories of electrochemistry	PSO-1	Understanding
CO-4	Determine the EMF of a cell	PSO-1, PSO-2	Analyzing
CO-5	Understand the fundamentals of group theory. Develop point groups to simple molecules.	PSO-1	Understanding

VI SEMESTER		
DSC- 11	**Organic Chemistry - III**	**18UCCH62**
Hrs / Week: 5 Hrs / Sem: 75	**Hrs / Unit: 15**	**Credit: 4**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive Level
CO-1	Categorize the different mechanisms of organic rearrangement reactions.	PSO-1	Analyzing
CO-2	Analyze the properties , preparation and uses of the polynuclear hydrocarbons	PSO-1	Analyzing
CO-3	Classify and elucidate the structure of some alkaloids.	PSO-1	Understanding
CO-4	Plan the isolation properties and structure of terpenoids and natural pigments.	PSO-1, PSO-2	Applying
CO-5	Analyze and characterize the structure of organic compounds by different spectroscopic methods	PSO-1, PSO-4	Analyzing

VI SEMESTER		
DSC- 12	**Project**	**18UCCH63**
Hrs / Week:6 Hrs / Sem: 90		**Credit: 6**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive Level
CO-1	Identify the potential areas of research in his/her field.	PSO-1	Applying
CO-2	Collect data from various sources including the internet , analyze them make new connection and link them to life	PSO-1, PSO-2, PSO-4, PSO-5	Creating
CO-3	Read and write original research articles	PSO-2	Understanding
CO-4	Hypothesize the scientific concepts published in research articles.	PSO-4	Creating
CO-5	Compile the results and present it as a report	PSO-2, PSO-4	Evaluating

VI SEMESTER		
DSE 4A	**Instrumental Methods of Analysis**	**18UECH6A**
Hrs / Week: 4	**Hrs / Sem: 60**	**Hrs / Unit: 12**	**Credit: 4**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive Level
CO-1	Understand the principle and applications of TGA and DTA	PSO-1	Understanding
CO-2	Analyze electro gravimetric analysis and Amperometric titrations	PSO-1	Analyzing
CO-3	Elaborate colorimetric and Spectrophotometric analysis	PSO-1	Evaluating
CO-4	Understand the UV and IR spectroscopy and their applications	PSO-1	Understanding
CO-5	Understand instrumentation and applications of NMR and Atomic absorption spectroscopy	PSO-1	Understanding

VI SEMESTER		
DSE 4B	**Food Chemistry**	**18UECH6B**
Hrs / Week: 4 Hrs / Sem: 60	**Hrs / Unit: 12**	**Credit: 4**

CO no.	**Upon completion of this course, students will be able to**	**PSO addressed**	**Cognitive Level**
CO-1	Classify the constituents of food and their qualitative, quantitative estimation.	PSO-1	Analyzing
CO-2	Outline the adulterations in food and their analysis method.	PSO-1	Applying
CO-3	Understand the various aspects of food additives.	PSO-1	Understanding
CO-4	Explain about the preservation of beverages and the side effects of soft drinks.	PSO-1	Understanding
CO-5	Learn about quality control measures in food chemistry.	PSO-1, PSO-4	Understanding

VI SEMESTER		
DSCP-7	**Physical Chemistry and Computer in Chemistry**	**18UCCH6P1**
Hrs / Week: 4 Hrs / Sem: 60		**Credit: 2**

Physical Chemistry and Computer in Chemistry – Course Outcome

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive Level
CO-1	Determine the molecular weight of a substance.	PSO-1, PSO-2	Evaluating
CO-2	Construct phase diagram of simple eutectic system	PSO-1, PSO-4	Creating
CO-3	Examine the strength of acids, bases and salts by Conductometric titrations.	PSO-1, PSO-2	Analyzing
CO-4	Predict the strength of ferrous ion and permanganate using Potentiometric titrations	PSO-1	Creating
CO-5	Compute various properties in chemistry using C++ program.	PSO-1, PSO-2, PSO-4	Evaluating

VI SEMESTER		
DSCP-8	**Organic Analysis**	**18UCCH5P2**
Hrs / Week: 4 Hrs / Sem: 60		**Credit: 2**

Organic Analysis – Course Outcome

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive Level
CO-1	Identify the presence of special elements present in the organic compounds.	PSO-4	Applying
CO-2	Analyze the organic compounds qualitatively	PSO-2, PSO-4	Analyzing
CO-3	Identify the functional groups present in different organic compounds	PSO-1	Applying
CO-4	Classify the saturated and unsaturated organic compounds.	PSO-1	Analyzing
CO-5	Develop the synthesis of derivative compounds for their respective functional compounds	PSO-2, PSO-4	Applying

VI SEMESTER		
SEC - II	**Pharmaceutical Chemistry**	**18USCH61**
Hrs / Week: 2	**Hrs / Sem: 30**	**Hrs / Unit: 6**	**Credit: 2**

CO no.	Upon completion of this course, students will be able to	PSO addressed	Cognitive Level
CO-1	Understand the concepts and terminologies of pharmaceutical chemistry	PSO-1	Understanding
CO-2	Outline the mechanism of action and metabolism of drugs	PSO-1	Understanding
CO-3	Understand the functions of various drugs	PSO-1	Understanding
CO-4	Explain the important diseases and their treatment	PSO-1	Understanding
CO-5	Infer the common diseases and important disorders of human beings and the drugs used in the treatment	PSO-1	Understanding