**BACHELOR OF SCIENCE CHEMISTRY**

**SEMESTER – I**

**CORE COURSE I: GENERAL CHEMISTRY-I (21UCH01)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Understand how to use and store different types of chemicals and get knowledge about volumetric estimations.

**CO2**: Impact the quantum numbers and principles of atom structure.

**CO3**: Acquire the knowledge to understand the periodic properties of elements in the periodic table.

**CO4**: Explain the IUPAC name, structure, and bonding in alkenes and alkyne compounds.

**CO5**: Evaluate the kinetic theory of gases.

**ALLIED COURSE: ALLIED BOTANY-I (21UBOA01)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1:** Students can learn about Thallophyta: Algae: general characters study of the structure and life cycle of some genera

**CO2:** The general study of bacteria and viruses and the economic importance of bacteria

**CO3:** To learn the pteridophytes and gymnosperms

**CO4:** To study Plant Physiology: Osmosis, absorption of water, photosynthesis, light reaction, Calvin cycle Transpiration: types and mechanisms of stomata movement

**SEMESTER-II**

**CORE COURSE: GENERAL CHEMISTRY-II (21UCH02)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1:** Generalise the different types of bonds in chemical compounds.

**CO2**: Evaluate the hydrides, silage, and carbides and their properties.

**CO3**: Distinguish the types of intermediates and predict their reactivity.

**CO4**: Perform a systematic and skilled study of the different types of substitution reactions in aromatic compounds.

**CO5**: The developing concept of liquid state and liquid crystals

**SBEC-I: FOOD AND NUTRITION (21UCHS01)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: To know, interpret, and apply nutrition concepts to evaluate and improve the nutritional health of communities.

**CO2**:  Identify and apply food principles to food and nutrition systems.

**CO3**: Get knowledge about the adulteration of food.

**CO4**: Collect information for food preservation and food processing techniques.

**CO5**: Understand the source of vitamins and minerals

**ALLIED COURSE: ALLIED BOTANY - II  (21UBOA02)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1:** Students can learn about the morphology of plants: plants and their parts, the structure and function of roots and stems,  and leaves and their parts. Phyllotaxy.

**CO2:** The Study of Taxonomy: Bentham and Hooker’s System of Classification Study of the six families and their economic importance

**CO3: To** learn the cytology: the ultrastructure of a plant cell and a brief outline of the cell wall, plasma membrane, endoplasmic reticulum, mitochondria, chloroplast, and nucleus cell division**.**

**CO4:** To study anatomy: meristems, simple permanent tissues (parenchyma, collenchymas, sclerenchyma), and complex permanent tissues**.**

**CO5:** To know about the structure and development of another male gametophyte and the structure and development of the ovule and female gametophyte.

**CORE PRACTICAL-I: VOLUMETRIC ESTIMATIONS AND ORGANIC**

**PREPARATION (21UCHP01)**

 **COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: State the applications of quantitative analysis.

**CO2**: Determine the physical constants of organic substances accurately.

**CO3**: Perform volumetric estimations skillfully.

**SEMESTER-III**

**CORE COURSE III: GENERAL CHEMISTRY-II (21UCH03)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Know about the transition metals, their properties, and the principles of qualitative inorganic semi-microanalysis.

**CO2**: Develop skills in the area of reaction mechanisms.

**CO3**: Know the knowledge about unsaturated acids, hydroxyl acids, and dicarboxylic acids.

**CO4**: Enable the student to employ and understand the properties of solids and defects present in solids.

**CO5**: Know how to use the first law of thermodynamics.

**SEMESTER - IV**

**CORE COURSE-IV: GENERAL CHEMISTRY-IV (21UCH04)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1:** Understand nuclear chemistry.

**CO2**: Learn about heteroatomic heterocyclic systems

**CO3**: Explain the main physical and chemical properties of amines.

**CO4**: Discuss the fundamental laws of thermodynamics.

**CO5**: To apply the knowledge of science and fundamentals to model the energy conversion phenomenon

**SBEC-II: POLYMER CHEMISTRY (21UCHS02)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1:** Get knowledge about polymers and different methods of polymer preparation.

**CO2**: Demonstrate an ability to distinguish different polymer polymerization reactions and their mechanisms.

**CO3**: Understand the relationships between polymer molecular weight, molecular weight distribution, and the properties of polymeric materials. Learn how actual polymerization is performed in industries.

**CO4**: Improve and expand their skills in performing and analysing the thermal and mechanical properties of polymers.

**CO5**: The critical thinking about how to improve the setup for better polymerization and about plastics and resins

**CORE PRACTICAL-II: INORGANIC QUALITATIVE ANALYSIS & INORGANIC PREPARATION (21UCHP02)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Analyze the inorganic captions and anions systematically.

**CO2**: Utilize the chemical reactions for the identification of the given radicals.

**CO3**: Apply the theoretical knowledge in salt analysis

**SEMESTER-V**

**CORE COURSE V: INORGANIC CHEMISTRY-I (21UCH05)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Focused on acid-base knowledge and skills are particularly essential for success.

**CO2**: Recall the most important geometries and oxidation states of f-block elements.

**CO3**: Classify the basic knowledge and theories of coordination compounds to determine various isomerisms.

**CO4**: Predict the structure of molecules or ions by using different types of bond theory.

**CO5**: Understand the properties of the transition metal complexes.

**CORE COURSE VI: ORGANIC CHEMISTRY-I (21UCH06)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: To know about chital and optically active compounds and types of projection formulas

**CO2**: Cis-trans isomers result from restricted rotation.

**CO3**: Understand in detail about amino acids and protein structures.

**CO4**: An understanding of structure-function relationships for nucleic acids

**CO5**: Explain the importance of natural compounds as lead molecules for new drug discovery.

**CORE COURSE VII: PHYSICAL CHEMISTRY-I (21UCH07)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Describe the law of chemical equilibrium.

**CO2**: Experimental methods in the study of kinetics and calculating the equilibrium constant from concentration data

**CO3**: Different types of theory are involved in the determination of the reaction rate constant.

**CO4**: Understand metallic and electrolytic conductance Determine the rate law of chemical change based on experimental data.

**CO5**: Analyse solutions of strong electrolyte

**ELECTIVE-I: ANALYTICAL CHEMISTRY (21UCHE01)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**:  Get the skill about error analysis, separation techniques, and purification techniques.

**CO2**: imparts knowledge about the gravimetric analysis method

**CO3**: Analyse UV spectroscopy

**CO4**: Analyse IR spectroscopy

**CO5**: Analyse Raman spectroscopy

**SBEC-III: AGRICULTURAL CHEMISTRY (21UCHS03)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1** Imparts knowledge on essential nutrients, soil fertility, and nutrient transformations in soil.

**CO2**: Manures, fertilisers, and soil fertility management through various approaches

**CO3**: Useful in making decisions on pesticides and insecticides.

**CO4**: Fungicides Act and Herbicides Rules

**CO5**: Fate of classification and properties of soil

**SBEC-IV: DYE STUFFS AND TREATMENT OF EFFLUENTS (21UCHS04)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Understand what dye is and its classification.

**CO2**: Make the students understand chemistry and the various dying methods used for the chemical industry in general and Dyestuff industry

**CO3**: Make them understand the dye processes and their applications.

**CO4**: Enable them to analyze and identify the proper synthetic method.

**CO5**: Develop in them the capacity to understand the proper selection of chemical processes and textile effluent.

**SEMESTER - VI**

**CORE COURSE-VIII: INORGANIC CHEMISTRY-II (21UCH08)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1:** Demonstrate knowledge of advanced content in the areas of inorganic chemistry, such as bioinorganic compounds.

**CO2**: Demonstrate knowledge of advanced content in the areas of inorganic chemistry, such as organomettalic compounds.

**CO3**: Make the students acquire an understanding of nanoscience and its applications.

**CO4**: Make the students acquire an understanding of some special element.

**CO5** predicts the symmetry element, symmetry operations, and magnetic properties of atoms and molecules.

**CORE PAPER -IX: ORGANIC CHEMISTRY-II (21UCH09)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Identify several major functions of carbohydrates.

**CO2**: Role of Vitamins in Our Daily Diet and Get Skills About Antibiotics

**CO3**: Understand the group or an atom migration during the course of the reaction.

**CO4**: Identify an oxidation-reduction reaction based on changes in oxidation numbers across the chemical change.

**CO5**: A functional understanding of the field of green chemistry

**CORE COURSE-X: PHYSICAL CHEMISTRY-II (21UCH10)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1:** Describe the factors that make one substance soluble in another.

**CO2**: Capable of applying the properties obtained from phase diagrams in designing experiments to solve specific problems.

**CO3**: Understand electrolysis cells and galvanic cells

**CO4**: Describe the concentration cell and storage cell.

**CO5**: Formulate the macroscopic and quantum laws of the absorption of light by molecules, then energy transfer in photochemical reactions.

**ELECTIVE-II: NANO & GREEN CHEMISTRY (21UCHE02)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Make the students acquire an understanding of nanoscience and its applications.

**CO2**: Foundational knowledge of nanoscience and related fields

**CO3**: Help them understand the broad outline of nanoscience and nanotechnology.

**CO4**: A functional understanding of the field of green chemistry

**CO5**: Know about the principles of green chemistry and understand several real-world examples.

**SBEC- V: PHARMACEUTICAL CHEMISTRY (21UCHS05)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1:** Develop knowledge about the terms used in pharmacy.

**CO2**: Describe different types of antibiotics, their structure, and their application process.

**CO3**:  Know about the analgesics and their uses during operations.

**CO4**: Differentiate different types of anaesthetics.

**CO5**: Develop ideas about home remedies for common diseases using Indian medicinal plants.

**ELECTIVE-III: INDUSTRIAL CHEMISTRY (21UCHE03)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1:** Known about basic chemical principles relevant to explosives science

**CO2**: Contribute to the teaching, research, and other developmental activities of leather technology and its allied fields.

**CO3**: Apply the electrochemical principles in batteries and understand the fundamentals of corrosion.

**CO4**: Known basic information about paints, varnishes, and cleansing agents

**CO5**: Basic knowledge of cement and glass

**CORE PRACTICAL-III: PHYSICAL CHEMISTRY PRACTICAL (21UCHP03)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1:** Predict the rate constant for the ester hydrolysis reaction.

**CO2**: Assess the eutectic composition and eutectic temperature of a simple system.

**CO3**: Determine the transition temperature by using a thermometric method.

**CO4**: Identify the strength of the alkaline solution by using potentiometric and metric methods.

**CO5**: Evaluate the equivalent conductance of a strong electrode and the dissociation constant of weak acids.

**CORE PRACTICAL-IV: GRAVIMETRIC ESTIMATIONS & ORGANIC ANALYSIS (21UCHP04)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1:** Relate the weight of various metals by using gravitational analysis.

**CO2**: Formulate various organic complexes.

**CO3**: Purify an impure organic compound by crystallisation.

**CO4**: Develop efficient knowledge on qualitative analysis of organic compounds