

**SRI SARADA COLLEGE FOR WOMEN (AUTONOMOUS), SALEM -16**  
**DEPARTMENT OF CHEMISTRY**  
**Programme Title: B.Sc. Chemistry**

**Course Outcomes (CO)**

On the successful completion of the course, students will able to

Course code	Course Name	Course Outcomes
20UCHC1	CORE-I: GENERAL CHEMISTRY – I	CO1: Gain knowledge about the atomic structures
		CO2: Have insights on the periodic properties of elements
		CO3: Have an overview of chemical bonding- hybridization and geometry of simple molecules
		CO4: Illustrate the homonuclear and heteronuclear molecules using VSEPR and MOT
		CO5: Categorize the various electron displacement effects and Identify the reaction intermediates
20UCHC2	CORE-II: GENERAL CHEMISTRY – II	CO1: Identify the characteristics of acids, bases and solvents.
		CO2: Gain knowledge about the preparation and properties of hydrides and carbides.
		CO3: Acquire the knowledge about the preparative methods of saturated and unsaturated hydrocarbons.
		CO4: Learn the preparation and reaction mechanism of alkenes and alkynes
		CO5: Acquire the comprehensive knowledge of the kinetic theory of gases, ideal and real gas behavior.
20UCHSC1	SKILL BASED SUBJECT-I: CLINICAL BIOCHEMISTRY	CO1: Understand the nutritive values of carbohydrates, proteins and fats
		CO2: Learn and comprehend the functions of micro nutrients and uses of radioisotopes in diagnosis and therapy
		CO3: Know and analyze the composition, functions of blood grouping and diagnostic test for blood
		CO4: Learn the classification, chemical nature, properties and biological functions of enzymes and hormones
		CO5: Identify and understand the functions of vitamins and minerals in maintaining health
20UPHAC1/ 20UBOAC1/ 20UZOAC1/ 20UHSAC1	ALLIED CHEMISTRY-I	CO1: Summarize the basic knowledge about the stereoisomerism and types of organic reactions.
		CO2: Learn and understand the concepts of chemical kinetics
		CO3: Gain the knowledge about the concentration terms and acid-base indicators
		CO4: Obtain an outline about the fuels and fertilizers
		CO5: Understand the sources, environmental effects and control measures of air, water and soil pollutions
20UCHC3	CORE-IV: GENERAL CHEMISTRY – III	CO1: Understand the basic principles and concepts of volumetric analysis
		CO2: Understand and apply the concepts of aliphatic nucleophilic and aromatic electrophilic substitution reactions in alkyl and aryl halides
		CO3: Illustrate the preparation, properties and mechanism of reactions of phenols, aldehydes and ketones
		CO4: Explain the basic concepts of chemical thermodynamics
		CO5: Define and distinguish between the solids and liquid crystals
20UCHQC1	CORE PRACTICAL-I	CO1: Learn the principle and terminologies involved in volumetric estimation

		CO2: Understand the methodology of doing acid-base, redox, precipitation and complexometric titration
		CO3: Prepare the standard solution and to determine the concentration of solutions in various units
		CO4: Plan and perform experiments and interpret experimental results
20UCHSC2	SKILL BASED SUBJECT II: CHEMISTRY OF COSMETICS	CO1: Have basic knowledge about skin preparations
		CO2: Learn about various herbal cosmetics
		CO3: Acquire fundamental knowledge about shampoos and hair dyes
		CO4: Know about soaps and its cleansing action
		CO5: Know about detergents and its types
20UPHAC2/ 20UBOAC2/ 20UZOAC2/ 20UHSAC2	ALLIED CHEMISTRY-II	CO1: learn about the magnetic properties of complexes and chelation
		CO2: relate polymerization and its types
		CO3: acquire a knowledge of fundamental concepts in nuclear chemistry
		CO4: understand the terminologies of thermodynamics
		CO5: receive an introductory framework in chemical equilibrium
19UCHC4	CORE-V: GENERAL CHEMISTRY – IV	CO1: Have a profound Knowledge in Inorganic Qualitative Analysis
		CO2: Understand the chemistry of Nitrogen and Oxygen family
		CO3: Have a deeper insights on carboxylic acids and its derivatives
		CO4: Have fundamental knowledge on thermodynamic laws and various thermodynamic parameters
		CO5: Derive and discuss various thermodynamic parameters and equation
19UCHSC3	SKILL BASED SUBJECT III: AGRICULTURAL CHEMISTRY	CO1: Understand fundamental knowledge of soil formation and physical properties of soil
		CO2: Learn about soil reactions and to study soil acidity and alkalinity
		CO3: Know the detail study of soil fertility and productivity
		CO4: Familiarize the parameters of water and able to analyse the quality of water
		CO5: Acquire knowledge about the potential impact of agrochemicals on soil, plant and environment
19UCHNEC 1	NON-MAJOR ELECTIVE-I: INDUSTRIAL CHEMISTRY	CO1: Acquire the basic knowledge about the fuels
		CO2: Understand the basic information about edible and non edible oil and the process of making soap
		CO3: Gain the knowledge about the manufacture of sugar and ethanol
		CO4: Understand the classification and application of paints, pigments and varnishes
		CO5: Gain sound knowledge about the various metallurgical processes
19UCHEC1	Elective-I-No.1: ANALYTICAL CHEMISTRY	CO1: To handle chemicals and glass wares safely and to know different methods of purification and separation
		CO2: Understand the principle, procedure and applications of paper, thin layer, column and ion exchange chromatographic methods
		CO3: To comprehend the importance of sampling methods, causes of error and their minimization, quantitative estimations and interpretation of data
		CO4: To perform accurate quantitative measurements with an understanding of the theory of gravimetric analysis
		CO5: To apply the theory of polarographic technique to qualitative and quantitative analysis
19UCHEC1	ELECTIVE-I-	CO1: Acquire the knowledge about the vegetable fibres and animal

	No.2: TEXTILE CHEMISTRY	fibres
		CO2: Comprehend the knowledge on manufacturing, properties and uses of Rayon.
		CO3: Understand the process prior to dyeing
		CO4: Gain an indepth knowledge of principles of bleaching
		CO5: Obtain the knowledge about the classification of dyes and dyeing process
19UCHQC2	CORE-VI: CORE PRACTICAL – II	CO1: Identify acid and basic radicals and to record the observations
		CO2: Categorize the groups of basic radicals and recognize the interfering radicals
		CO3: know the chemical reactions responsible for every characteristic changes
19UCHSQC4	SKILL BASED SUBJECT- IV - PRACTICAL - ANALYTICAL METHODS IN CHEMISTRY	CO1: do water analysis and sample purification
		CO2: have hands on training in separation techniques
		CO3: determine pH and metal ions
19UCHNEC 2	NON-MAJOR ELECTIVE-II: DAIRY CHEMISTRY	CO1: gain knowledge about the constituents and compositions of milk
		CO2: procure the concepts of coagulation, scorching and scum formation of milk
		CO3: understand about the pasteurization and homogenization process
		CO4: perceive information about the non-fermented milk products
		CO5: familiarize with fermented milk products and milk contaminants
19UCHC5	CORE VII: INORGANIC CHEMISTRY – I	CO1: Understand the general trends in the reactivity of elements within the group of IA, IIA, IVB, VB and VIB elements and have basic knowledge on metallurgical operations
		CO2: Understand the metallurgy and Chemistry of Ti, V, Mo, and W
		CO3: Learn about the new class of interhalogen compounds
		CO4: Know the fundamentals of coordination chemistry and isomerism in coordination complexes
		CO5: Have an overview of theories of coordination complexes
18UCHC6	CORE-VIII: ORGANIC CHEMISTRY – I	CO1: understand the concepts of optical isomerism; apply CIP rules for R, S notations and gain knowledge about various projection formulas
		CO2: know the ideas about geometrical isomers; analyse conformations of simple aliphatic compounds and cyclohexane derivatives
		CO3: learn and know the preparation, properties of nitro compounds, amines, diazonium compounds, esters and ideas of tautomerism
		CO4: classify and identify the structures of carbohydrates; analyse the configuration, conformations and interconversion of monosaccharides
		CO5: Elucidate the structure of carbohydrates and heterocycles; learn the preparation and properties of heterocycles
18UCHC7	CORE-IX: PHYSICAL CHEMISTRY – I	CO1: Understand the concepts of chemical equilibrium and its applications
		CO2: Construct and explain phase diagrams of one and two component systems
		CO3: Analyse the behaviour of different liquids
		CO4: Interpret colligative properties; understand the concepts and applications of distribution law.

		CO5: Understand chemical kinetics and calculate the order of different reactions
18UCHEC2	ELECTIVE-II: NO.1 PHARMACEUTICAL CHEMISTRY	CO1: Understand the important terminologies and uses of medicinally important compounds in Pharmaceutical chemistry
		CO2: Know the effective use of analgesics, antiseptics and disinfectants
		CO3: Comprehend the preparation and uses of volatile and non-volatile anaesthetics
		CO4: Apprehend the knowledge of alkaloids, Transquillers and Psychodelic drugs in clinical case scenario.
		CO5: Obtain the knowledge about the identification of blood grouping and haematological agents.
18UCHEC2	ELECTIVE-II: NO.2 APPLIED CHEMISTRY	CO1: know basic concepts of leather chemistry
		CO2: gain knowledge about various tanning process
		CO3: learn about natural and synthetic dyes
		CO4: Acquire knowledge about the utilities of various dyes
		CO5: Understand the environmental impact of various dyes
18UCHNSC1	NON MAJOR SKILL BASED SUBJECT-I: HOME CHEMISTRY	CO1: know basic concepts of tinning, corrosion, acids and bases.
		CO2: gain knowledge on food adulteration, preservatives and antiseptics.
		CO3: learn about carbohydrates, proteins, vitamins and minerals.
		CO4: have hands on training in some home products.
		CO5: learn few of our traditional medicinal plant usages.
18UCHC8	CORE-XIII: INORGANIC CHEMISTRY – II	CO1: Understand the general characteristics of f-block element and the Chemistry of Uranium
		CO2: Comprehend the basic concepts of nuclear chemistry
		CO3: Have a basic knowledge on the band structure of solids and role of band gap in determining the electrical properties (conductors, semiconductors and insulators) of materials; defects in solids
		CO4: Gain knowledge on oxoacids of sulphur and halogens, hydridization of xenon compounds and the concepts of metal carbonyls.
		CO5: Learn the Chemistry of fertilizers, paints and pigments.
18UCHC9	CORE-XIV: ORGANIC CHEMISTRY – II	CO1: To comprehend the chemistry of amino acids and biopolymers such as proteins and nucleic acids
		CO2: Understand the isolation, classification and elucidate the structure of alkaloids, terpenoids and vitamins
		CO3: Know the preparation, properties and utility of dyes, antibiotics and sulpha drugs
		CO4: Get an insight of classification and mechanism of molecular rearrangements
		CO5: Learn various name reactions and synthetic applications of organometallic and organic reagents
18UCHC10	CORE-XV: PHYSICAL CHEMISTRY – II	CO1: Comprehend the theories of reaction rates
		CO2: Develop problem solving skills in electrochemistry
		CO3: Calculate dissociation constant and determine solubility
		CO4: Categorize standard electrode potentials and apply emf measurements
		CO5: Summarize different electrochemical cells
18UCHQC3	CORE-X: CORE PRACTICAL – III	CO1: characterize and confirm different functional groups
		CO2: gain knowledge about preparations
		CO3: demonstrate the preparation and recrystallisation of organic compounds

18UCHQC4	CORE-XI: CORE PRACTICAL – IV	CO1: estimate $\text{Ni}^{2+}$ , $\text{Pb}^{2+}$ , $\text{Cu}^{2+}$ , $\text{Ba}^{2+}$ , $\text{Ca}^{2+}$ , $\text{SO}_4^{2-}$ ions
		CO2: gain knowledge about preparations
		CO3: perform the preparative and recrystallisation methods of some complexes
18UCHQC5	CORE-XII: CORE PRACTICAL – V	CO1: Plan and perform kinetic experiments and interpret experimental results
		CO2: Determine the partition coefficient of solute in partly miscible solvents
		CO3: Appreciate the effect of solute on the solvent
		CO4: Construct the phase diagram for eutectic system
		CO5: Determine the cell constant, equivalent conductance and specific conductance through conductometric titration
18UCHEC3	ELECTIVE-III- No.1: THERMOANALYTICAL AND SPECTROANALYTICAL METHODS	CO1: Understand the principle, instrumentation and applications of thermal methods like TGA, DTA and thermometric titrations
		CO2: Acquire a basic idea of different electromagnetic regions and become familiar with the principle, instrumentation and applications of UV-Vis spectroscopy
		CO3: Illustrate the mechanisms that give rise to the IR and Raman absorption bands and identify the functional group present in unknown molecules
		CO4: Demonstrate an understanding of the process responsible for NMR chemical shifts and spin-spin coupling used for identifying the structure of molecules.
		CO5: Able to describe the instrumentation in mass spectrometry, apply the principles of mass spectrometry to predict the fragmentation patterns of simple organic molecules
18UCHEC3	ELECTIVE III- No.2: POLYMER CHEMISTRY	CO1: Understand the basic concepts of polymerisation
		CO2: Distinguish between the natural and synthetic polymers
		CO3: Understand the polymerisation techniques, structure and properties of polymers
		CO4: Understand the various polymer processing methods
		CO5: Identify the biopolymers and their applications
18UCHNSC2	NON MAJOR SKILL BASED SUBJECT-II FOOD CHEMISTRY	CO1: Understand the chemistry of carbohydrates, proteins and fats
		CO2: Gain the knowledge about the sources and importance of vitamins and minerals
		CO3: Familiarize about the different types of hot and cold beverages
		CO4: Outline the knowledge on various food additives
		CO5: Identify the food preservation techniques