

**KRISHNASAMY COLLEGE OF SCIENCE,ARTS AND MANAGEMENT
FOR WOMEN,CUDDALORE.**

Department of Chemistry(2023-24)

Programme Outcomes B.Sc Degree Programme

- Students will possess basic subject knowledge required for higher studies, professional and applied courses
- Students will acquire basic Practical skills & Technical knowledge along with domain knowledge of different subjects in the science & humanities stream.
- Students will develop scientific aptitude Integrate skills of analysis, critiquing, application and creativity.
- Students will employ appropriate digital tools and techniques necessary in analyzing data and creative design.
- Students will gain competence to pursue higher learning, research and careers or will be able to opt for entrepreneurship
- Students will interact meaningfully with others displaying leadership and coordination in executing projects.
- Students will demonstrate responsibility as citizens committed to national development through community outreach, wellness of self and a sustainable environment.

PROGRAMME SPECIFIC OUTCOMES

PSO1: Students acquire in-depth knowledge of the fundamental concepts in all disciplines of chemistry.

PSO2: Students can disseminate the basics of chemistry and advanced topics and analytical skills in organic, inorganic and physical chemistry.

PSO3: Students will be able develop creativity in academics and research.

PSO4: Students will be able apply digital tools to collect, analyse and interpret data and present scientific findings.

PSO5: gain competence to pursue higher education and career opportunities in chemistry and allied fields.

PSO6: exhibit leadership qualities to work individually and within a team in organizing curricular, co-curricular and extracurricular activities.

PSO7: apply the concepts of chemistry to solve problems in the community, entrepreneurial and research pursuits.

PSO8: exhibit competence in educational, industrial and research pursuits that contribute towards the holistic development of self and community.

204. B. Sc. Chemistry(2022-2023)

22UCHEC13:GENERAL CHEMISTRY – I

COURSE OBJECTIVES

- To provide basic idea about regarding atomic structure
- To impart knowledge about Periodic Properties, Bonding Concepts, Ionic Bond, VSEPR and MO Theories.
- To acquire in-depth knowledge about Nomenclature of Organic Compounds, Hybridisation, Reaction Intermediates.
- To inculcate interest in Gaseous State, Kinds of velocities, Virial equation of state.
- Make the students to understand about Liquid state, Liquid crystals, Solid state, X-ray diffraction

COURSE OUTCOMES

- Recollect the Chemistry of Quantum Numbers.
- Discuss various types of bonding through VB & MO theories.
- Name simple Aliphatic and Aromatic Compounds and Illustrate and apply electron displacement effects and reaction mechanisms.
- Understand Gaseous state, kinds velocities.
- Elaborate the basic concepts of solid and liquid states.

22UCHEC14:GENERAL CHEMISTRY – II

COURSE OBJECTIVES

- Lab safety and Nature of chemicals.
- Types of titrations and Concentration terms.
- Semi micro analysis and precipitation techniques.
- Organic analysis
- Logarithm, drawing graph, rules of differentiation and integration.

COURSE OUTCOMES

After completion of the course students will be able to understand

- How to be safe in chemistry laboratory and handle chemicals carefully.
- Concentration terms, handling burette, pipette etc and various types of titrations.
- How qualitative methods are useful in finding inorganic radicals.
- Organic analysis.
- Taking logarithm, drawing graphs.

22UCHEA01: CHEMISTRY-I(ALLIED)

COURSE OBJECTIVES

- To impart wide knowledge about Metallurgy.
- To invoke the knowledge in basic concepts of chemistry.
- To provide a knowledge on chemical kinetics.
- To Familiarize the students about Industrial Chemistry.
- To inculcate interest in Nuclear chemistry.

COURSE OUTCOMES

- Acquire thorough Knowledge about Metallurgy and Fundamental concepts in Organic chemistry.
- Acquire an idea about Chemical Kinetics.
- Identify the Importance of Nuclear chemistry and Metallic Bond.
- Acquire Knowledge on Photochemistry
- Extensive Knowledge about Fuels.

22UCHEC23:GENERAL CHEMISTRY-III

COURSE OBJECTIVES

- To obtain a comprehensive overview on s and p block elements.
- To understand the properties and reactions of alkanes, alkenes and alkynes.
- To impart knowledge regarding the basics of dienes and cycloalkanes.
- To understand the various terminologies and reactions related to Quantum Chemistry and Thermodynamics.
- To understand the laws and reactions related to Thermochemistry.

COURSE OUTCOMES

- Compare basic properties of elements and their Compounds of s & p block elements.
- Explain the reaction mechanisms of alkanes, alkenes and alkynes and predict the products.
- Classify dienes and analyze the stability of alkanes, alkenes and cycloalkanes.
- Recollect the basic concepts of Quantum Theory and Thermodynamics.
- Calculate thermodynamic parameters using thermochemical equations and data.

22UCHEE26-1:HEALTH CHEMISTRY

COURSE OBJECTIVES

- To recognize the causes of common diseases, their control and treatment
- To understand the first aid for accidents
- To study the organic pharmaceutical aids
- To know about organic diagnostic agents
- To have an idea about diabetes and cancer.

COURSE OUTCOMES

- Describe the causes, control and treatment of common diseases.
- Understand the concepts of first aid for accidents.
- Classify different organic pharmaceutical aids.
- Explain organic diagnostic agents.
- Describe diabetes, cancer and their control and treatment.

22UCHEA02: CHEMISTRY – II(ALLIED)

COURSE OBJECTIVES

- Make the students familiar with Coordination Chemistry.
- To acquire thorough knowledge about Carbohydrates and proteins.
- Enable the students to acquire knowledge in Electrochemistry.
- To have an idea about paint and varnishes.
- To create about knowledge in medicinal chemistry.

COURSE OUTCOMES

- Wide Knowledge about Coordination Chemistry.
- Identify the importance of Carbohydrates, Amino acids and Proteins.
- Acquire Knowledge about the action of drugs.
- Able to understand about Paint and Varnishes.
- Able to understand the concepts of pH and Buffers in living systems.

22UCHEC33:GENERAL CHEMISTRY – IV

COURSE OBJECTIVES

- To gain Knowledge about p- Block Elements
- To understand the importance of halogen family-classification, interhalogen compounds
- To develop knowledge about aromaticity and electrophilic substitution reactions
- To enlighten the students about nucleophilic substitution reactions
- To expose the students to Second Law of Thermodynamics, Derivation of Equations, Related Problems and Applications wherever necessary.

COURSE OUTCOMES

- Ability to compare the properties of Carbon, Nitrogen and Oxygen elements and their compounds.
- To compare the properties of Halogens and their compounds.
- Apply Huckel's rule and predict the Aromaticity of compounds.
- To discuss the mechanism of substitution and elimination reactions of aliphatic and aromatic compounds.
- Ability to explain the thermodynamic second law and predict the spontaneity of a process.

22UCHEE36-1: AGRICULTURAL CHEMISTRY

COURSE OBJECTIVES

- To know the importance of agricultural chemistry
- To understand the role of fertilizers.
- To have an idea about the effect of fertilizers and manures
- To know about pesticides
- To study fungicides and herbicides

COURSE OUTCOMES

- Understand the basics of soil.
- Classify and explain plant nutrients and fertilizers
- Differentiate fertilizers and manures.
- Explain the classification of pesticides.
- Describe the Fungicides and herbicides.

22UCHEN37: MEDICINAL CHEMISTRY

COURSE OBJECTIVES

- To impart knowledge about Health and Nutrition
- To understand the composition of blood, urine and serum.
- To know about the common ailments like blood pressure, Diabetes etc.
- To understand the significance of Indian medicinal plants in the treatment of chronic diseases.
- To learn the basic idea of drugs and names of common drugs.

COURSE OUTCOMES

- Understand the composition of blood and biochemical analysis of Urine and Serum
- Gain knowledge about uses and side effects of Antibiotics, Antipyretics, Analgesics and tranquilizers.
- Explain the causes, symptoms and treatment of Blood pressure, Diabetes, Cancer and AIDS.
- Classify and understand the sources and diseases caused by deficiency of Vitamins.
- Analyse the therapeutic importances of Indian Medicinal plants

22UCHEC43: GENERAL CHEMISTRY – V

COURSE OBJECTIVES:

- To give better understanding of Noble gases,
- To study about Carboxylic Acids, Amines,
- To learn about Alcohols, Phenols, Naphthol, Important Name Reactions, Mechanism,
- To expose the students to III law of Thermodynamics
- To understand about Partial Molar Properties, Chemical Potential, Related Problems and Applications.

COURSE OUTCOMES

- Assess the compounds of noble gases.
- Describe the preparations, properties of carboxylic acids and amines.
- Justify the concept of equilibrium constant and free energy change.
- Analyse various applications of second law of thermodynamics.
- Illustrate the types of alcohols and their chemical properties.

22UCHES48:FOOD CHEMISTRY

COURSE OBJECTIVES

- To learn about the food and cereals.
- To recognize the importance of sugar, vegetable and fruits.
- To identify various beverages, appetizers.
- To acquire knowledge about food preservation.
- To know about food additives.

COURSE OUTCOMES

- Describe the food and cereals.
- Analyse sugar, vegetable and fruits.
- Know about beverages, appetizers.
- Explain food preservation.
- Analyse food additives.

22UCHEN47: CHEMISTRY IN TODAY'S WORLD

COURSE OBJECTIVES

- To help students visualize the importance of chemistry in today's world.
- To know artificial sweetening agents and food preservatives.
- To know about water treatment and industrial materials.
- To understand the crux of chemistry in the field of cosmetology and its various implications.
- To create awareness regarding fertilizers and manuring.

COURSE OUTCOMES

- 1) Appreciate the significance of food additives.
- 1) Use cosmetics safely.
- 2) Discuss the role of agro chemicals and quality of water.
- 3) Know the use of fertilizer.
- 4) Create awareness about Food Adulterants.

22UCHEC51: INORGANIC CHEMISTRY- I

COURSE OBJECTIVES

- To know the tendency of transition metals and to know the catalytic properties of transition metals and industrial applications of their compounds.
- To expose the students about the basic concepts of coordination complexes and the Isomerism of coordination complexes.
- To understand the theories of Coordination Compounds and their Properties.
- To help the students to understand the facts of reactions and reaction mechanism in complexes.
- To know the role and functions of conductors, superconductors and solid state materials.

COURSE OUTCOMES

- Explain the tendency, catalytic properties of transition metals and their industrial applications of their compounds
- Name the coordination compounds using IUPAC nomenclature and explain the various types of Isomerism exhibited by coordination complexes.
- Discuss the various theories of coordination compounds.
- Explain the mechanism and rates of reactions of coordination complexes.
- Assess the nature and types of solids and explain the band theory and defects of solids

22UCHEC52:ORGANIC CHEMISTRY – I

COURSE OBJECTIVES

- To effectively impart knowledge about carbohydrates.
- To enable the students to understand various stereoisomerisms and projection formulae for stereoisomers.
- To acquire an in-depth knowledge of conformational analysis and their stability.
- To cohesively understand the various reactions concerning nitro and amino compounds.
- To acquire a comprehensive overview of heterocyclic compounds.

COURSE OUTCOMES

- Elucidate the structures of saccharides.
- Assign the stereo configuration of Organic Compounds and conformation of cyclohexanes.
- Explain the preparation, properties and uses of Nitro alkanes and amines.
- Explain the mechanism of Organic named reactions.
- Explain the synthesis and properties of five and six membered heterocyclic compounds and condensed heterocyclic compounds.

22UCHEC53:PHYSICAL CHEMISTRY-I

COURSE OBJECTIVES

- To impart knowledge in essential topics in Physical Chemistry such as Solution and Ionic Equilibria.
- To gain knowledge about Phase Rule and its applications.
- To educate the students about Colligative Properties.
- To have an idea about Chemical Equilibrium.
- To understand the importance of Electrochemistry and its applications.

COURSE OUTCOMES:

- Differentiate the ideal and non-ideal solutions.
- Uses the Lever rule for two-
- Recognize, use and compare the colligative prope
- Understand the theories on weak and strong electroly
- Gain knowledge about various applications of conductance measurements.

22UCHEC54:ANALYTICAL CHEMISTRY

COURSE OBJECTIVES:

- To provide the basic idea of analytical techniques and to know about important terminologies involved in Error analysis,
- To study about the principles and classification of separation methods
- To expose the students the concepts of various chromatographic techniques.
- To impart wide knowledge about principles of gravimetric analysis and purification methods.
- To enlighten the students about the concepts and applications of Thermo analytical methods and Electrochemical Techniques

COURSE OUTCOMES:

- Students can handle the instruments with the proper analytical knowledge along with proper safety measures.
- Recommend proper method for the separation of mixture of compounds.
- Describe the basic principles and procedures of various chromatographic techniques
- Apply the principles of gravimetric analysis to perform gravimetric experiments.
- Use thermogravimetric and Electrochemical Techniques analysis and examine the themogram and voltammogram respectively.

22UCHEE58-1: POLYMER CHEMISTRY

COURSE OBJECTIVES

- To know the chemistry of polymers and polymerisation
- To understand the properties and reactions of polymers
- To study the plastics and resins
- To know about chemistry of commercial polymers
- To have an idea about advances in polymers

COURSE OUTCOMES

- Describe polymers and polymerization
- Explain the properties and reactions of polymers
- Classify plastics and resins
- Understand the chemistry of commercial polymers
- Describe bio polymers and conducting polymers

22UCHES59:APPLIED CHEMISTRY

COURSE OBJECTIVES

- To impart Knowledge about Petrochemicals.
- To learn about the process involved in paper and pulp technology.
- To instill an interest about the process of sugar industry.
- To enhance the knowledge about explosives.
- To create an interest in leather chemistry.

COURSE OUTCOMES

- Able to understand the concept of Petrochemicals.
- Prepare alcohol from Molasses.
- Understand the processes involved in paper technology.
- Extensive Knowledge about the Explosives and Leather Chemistry.
- Able to understand the concepts involved in tanning process.

22UCHEC61:INORGANIC CHEMISTRY-II

COURSE OBJECTIVES

- To know the tendency of Inner transition elements and to know the various processes involved in metallurgy.
- To introduce the students about the composition and stability of the nucleus and types of nuclear models.
- To help the students to understand the different types of radioactivity and their applications.
- To help the students to understand the development and uses of bioinorganic compounds.
- To develop an appreciation for the scope, diversity, and application of organometallic chemistry.

COURSE OUTCOMES

- Explain the chemistry of f-block elements
- Discuss about nuclear subatomic particles and nuclear stability.
- Outline radioactivity and uses of radioisotopes.
- Discuss the role of metal ions in biological systems.
- Explain the fundamental reaction types of organometallic compounds and their applications in homogeneous catalysis.

22UCHEC62: ORGANIC CHEMISTRY – II

COURSE OBJECTIVES

- To acquire an in-depth knowledge of molecular rearrangements and their mechanisms.
- To kindle interest in students in learning Bio-organic chemistry through the introduction of topics such as Proteins, Nucleic acids, Terpenes, Alkaloids etc.
- To effectively impart knowledge about structural determination and isolation of alkaloids from plant sources.
- To understand about antibiotics and terpenes and analyse their structures.
- To provide comprehensive introduction to organosulphur compound and aromatic sulphonic compounds.

COURSE OUTCOMES

- Explain the mechanisms of inter and intra molecular rearrangements.
- Classify amino acids and explain their preparation and properties and synthesis of Peptides.
- Differentiate between DNA and RNA.
- Explain primary and secondary structures of proteins.
- Elucidate the structures of Antibiotics, Alkaloids and Terpenoids.

22UCHEC63:PHYSICAL CHEMISTRY – II

COURSE OBJECTIVES

- To equip the students to understand about Surface Chemistry.
- To inculcate interest in Chemical Kinetics.
- Enable the students to acquire an indepth understanding on Photo Chemistry.
- To understand the importance of about Surface Chemistry.
- To invoke the basic knowledge of symmetrical elements and point group.

COURSE OUTCOMES

- Draw electrochemical cells, labelling the anode, cathode, and directions of ion and electron mov
- Understand the Electrochemical Series and its Applications
- Recognize the chemical reaction used in a lead-acid storage battery and H₂/O₂ fuel cell.
- Explain the laws of photo chemistry and express the kinetics of photochemical reactions.
- Understand the concepts of symmetrical elements and basics of group theory.

22UCHEE68-1: NANO CHEMISTRY

COURSE OBJECTIVES

- To introduce the basics of nanotechnology.
- To learn about the types of nano particles.
- To learn about various synthetic techniques of nano particles.
- To learn about the applications of nano particles.
- To learn the instrumental techniques used in characterization of nano materials.

COURSE OUTCOMES

- Able to explain the fundamentals of nano chemistry.
- Understand the various types of nano particles.
- Able to explain the various methods of synthesis of nano particles.
- Understand the various types of nano materials.
- Able to explain the various instrumental techniques of characterization of nano particles.

22UCHES69:DAIRY CHEMISTRY

COURSE OBJECTIVES

- To impart knowledge in Chemical composition of Milk.
- Make the students to understand the Milk processing techniques.
- Familiarize the students with the concepts of Milk product.
- To teach the students about the properties of Milk.
- To educate the students about Fermented Milk product.

COURSE OUTCOMES

- Able to understand the concepts of milk Processing.
- Knowledge about Milk Products.
- Wide Knowledge about Fermented Milk Products.
- Able to know the concepts involved in Pasteurization.
- Identify the changes and effect of heat on Milk.

404-M.SC CHEMISTRY
22PCHC11:ORGANIC CHEMISTRY – I

COURSE OBJECTIVES

- To learn the basic aspects of stereochemistry
- To gain knowledge about the reactive intermediate and reactions involving free radicals
- To study the mechanisms of Aliphatic Nucleophilic and electrophilic substitutions
- To learn the concepts of Aromaticity, Anti aromaticity and Homo aromaticity of Benzenoid and Non- benzenoid compounds
- To accrue skill of predicting the mechanisms of Aromatic substitution reactions.

COURSE OUTCOMES

At the end of the course, the student will be able to

- Describe the concept of Stereochemistry
- Compare the stabilities of various reactive intermediates.
- Analyse and propose reasonable mechanism for Substitutions in Aliphatic molecules
- Compare the stabilities of molecules based on aromaticity
- Analyze the mechanisms of Aromatic Substitution reactions

22PCHC12: INORGANIC CHEMISTRY - I

COURSE OBJECTIVES

- To know about the structure and bonding of inorganic compounds and the inorganic polymers.
- To study the concept of coordination chemistry and stability of the complexes
- To gain knowledge of metal-ligand orbital overlap, molecular orbital theory and energy level diagrams etc.,
- To learn about the mechanism of substitution reactions of octahedral complexes.
- To acquire skill of using substitution reactions of square planar complexes and electron transfer reactions for complexes.

COURSE OUTCOMES

The student will be able to

- 1) Gain knowledge about the structure and bonding of Inorganic compounds and explain Isopolyacids and hetropolyacids of Vanadium, Chromium, Molybdenum and Tungsten.

- 2) Illustrates the chemistry of metal clusters and discuss polyhedral boranes, carboranes and metallocarboranes
- 3) Explain the stability constant of co-ordination complexes and stereo chemistry for co-ordination complexes
- 4) Apply the molecular orbital theory and energy level diagrams, concept of weak and strong field ligands, Jahn-Teller distortion etc.,
- 5) Illustrate the Substitution reactions of square planar complexes and electron transfer reactions

22PCHC13: PHYSICAL CHEMISTRY –I

COURSE OBJECTIVES

- To understand the theories of chemical kinetics in reaction mechanisms.
- To apply the kinetic concepts in homogenous and heterogeneous catalyzed reactions.
- To study about Surface Chemistry, surface tension and catalysis.
- To identify the symmetry of elements, symmetry operations and apply the fundamentals of group theory in electronic spectroscopy
- To appreciate the principals involved in the Rotational and vibrational spectroscopic techniques.

COURSE OUTCOMES

At the completion of this course, the students will be able to

- derive the rate equation from mechanistic data and calculation
- relate microscopic properties of molecules with macroscopic thermodynamic observables
- gain knowledge about the Surface Chemistry and its mechanisms.
- apply group theory for molecules like water, ethylene, butadiene etc...
- imbibe basic aspects of spectroscopy and apply to poly atomic molecule

22PCHC16-1: POLYMER CHEMISTRY

COURSE OBJECTIVES

- To provide a thorough understanding of the basic concept of polymers
- To gain knowledge about the different polymerization mechanisms
- To learn the molecular weight determination and characterization of polymers.
- To exploit the polymer processing techniques for various applications.
- To study the importance of advanced polymers

COURSE OUTCOMES

On completion of the course, students should be able to

- Understand the basic concept of polymers and the chemistry of organic and inorganic polymers
- Understand the kinetics and mechanism of various polymerization techniques.
- Choose an appropriate analytical method to characterize polymers.
- Select an appropriate moulding technique to process a particular polymer.
- Realize the importance of advanced polymers.

22PCHEO17-1: FOOD CHEMISTRY

COURSE OBJECTIVES

- To understand the principles of food fermentation technology.
- To study about packaged drinking water.
- To study importance of beverages and its types.
- To study about food adulteration
- To understand about food preservation and packaging.

COURSE OUTCOMES

- Students will be able to acquire knowledge of fermented food.
- Acquire knowledge about packaged drinking water.
- Illustrate the importance of beverages and its types.
- Acquire knowledge about food adulteration.
- Illustrate the importance of food preservative.

22PCHEC21: ORGANIC CHEMISTRY – II

COURSE OBJECTIVES

- To learn about the conformations and reactivity of the substituted six membered ring systems
- To understand the mechanisms of addition and elimination reactions.
- To learn the name reactions with their mechanisms
- To learn the synthetic utilities of various oxidation and reduction reactions.
- To acquire knowledge on the various concepts of reaction kinetics and the HSAB principle.

COURSE OUTCOMES

At the end of the course the student will be able to,

- Compare the stability and reactivity of different conformers of Cyclohexane derivatives

- Solve problems based on additions to Carbon – Carbon and Carbon – Hetero atom multiple bonds.
- Propose mechanisms and predict the products with proper stereochemistry for various elimination reactions.
- Have a thorough knowledge of using proper reagents for specific Oxidation and Reduction reactions.
- Apply HSAB principle to Organic reactions and have sufficient knowledge on reaction kinetics and mechanism.

22PCHEC22: INORGANIC CHEMISTRY – II

COURSE OBJECTIVE

- To make the students knowledgeable in solid state chemistry.
- To study about stellar energy, nuclear reactions etc and to equip the students for their future career in nuclear industry.
- To learn the chemistry of lanthanides and actinides
- To understand the inorganic photochemistry.
- To gain knowledge about the bioinorganic complexes.

COURSE OUTCOME

At the end of the course students will be able to

- Explain the solid-state structures and structural defects
- Explain the nuclear models, Categorize the nuclear reactions, radio analytical techniques.
- Describe chemistry of lanthanides and actinides.
- Analyze and interpret the photo inorganic chemistry reactions.
- Describe the chemistry of bioinorganic complexes.

22PCHEC23: PHYSICAL CHEMISTRY - II

COURSE OBJECTIVES

- To know the foundations and the physical and mathematical basis of quantum mechanics and to apply the concepts of quantum mechanics to solve problems in microscopic systems.
- To understand the quantum mechanical approach to the atomic and molecular electronic structure and to know the limitations of quantum chemistry in the evaluation of macroscopic properties
- To know the mechanisms of photo chemical reaction
- To know the construction of phase diagram for one, Two and three component systems

- To understand the catalysis of reactions.

COURSE OUTCOMES

At the completion of this course, the students will be able to

- Identify the application of quantum chemistry in MO and VB theories and construct hybridizationschemes.
- Derive the equation for one dimensional and two-dimensional boxes.
- Identify the photo chemical reactions
- Construct the phase diagram for the Three components system.

22PCHEE26 -1: GREEN CHEMISTRY

COURSE OBJECTIVES

Enable the students to

- Understand the basic principles and importance of green chemistry for industrial applications
- Acquire knowledge about the microwave and ultra sound assisted synthesis
- Understand the concept of phase-transfer catalysis
- Gain knowledge about ionic liquids, green reagents,
- Crown ethers and their applications

COURSE OUTCOMES

- Define green chemistry and explain basic principles
- Discuss and appraise green reagents and microwave assisted green synthesis
- Analyse the synthetic applications of ultra sound assisted green synthesis and ionic liquids.
- Apprise the advantages and applications of phase transfer catalysis in organic synthesis.
- Suggest crown ethers for different reactions in organic synthesis.

22PHUMR27: HUMAN RIGHTS

COURSE OBJECTIVES

- To understands the conceptual background of Human Rights.
- To study international and regional norms and institutional mechanisms of Human Rights.
- To know the international concern for Human Rights.
- To explores the emerging issues in international human rights.
- To study the Classification of Human Rights.

COURSE OUTCOMES

At the end of the course, the student

- will have knowledge about the conceptual background of Human Rights.
- can apprise on International Human Rights norms and mechanisms.
- can understand the emerging dimensions of Human Rights in international forum.
- can explain about the Third Generation Human Rights
- can discuss about Right to Clean Environment.

22PCHE31: ORGANIC CHEMISTRY- III

COURSE OBJECTIVES

- To understand the concepts of UV and IR spectroscopic techniques and to apply these techniques in the structural analysis of organic compounds.
- To learn about the ^1H NMR and ^{13}C NMR apply it for the structural elucidation of the compound
- To study the mass spectroscopic technique.
- To understand the concept of Photochemical Reactions.
- To study the concept of Pericyclic Reactions.

COURSE OUTCOMES

The student will be able to

- Visualize the importance of UV-Visible and IR spectroscopy.
- Acquire knowledge of vibrational transition and identify functional groups
- Apply the concept of Mass spectroscopy to different compounds
- Elucidate the structure of organic compounds using NMR
- Solve photochemical and pericyclic problems

22PCHE32: INORGANIC CHEMISTRY- III

COURSE OBJECTIVES

- To analyze and interpret the IR and NMR spectra of Inorganic compounds and coordination complexes.
- To study the Mossbauer and Photoelectron spectroscopy for metal complexes
- To gain knowledge about the principle and applications of ESR and NQR

- To provide the students a thorough understanding of the relationship between the structures, chemical bonds and chemical properties in organo metallic chemistry.
- To learn about the role of metals in different enzymes

COURSE OUTCOMES

The student will be able to

- Illustrate the different types of reaction of organo metallic compounds and discuss the various catalysis processes in organo metallic chemistry.
- Analyze and interpret the IR, Raman and NMR spectra of Inorganic compounds and coordination complexes
- Apply Mossbauer and photo electron spectroscopic data for the structural classification of inorganic compounds.
- Describe the principle and applications of ESR and NQR for inorganic molecules.
- Explain about the structure and functions of metallo enzymes and role of trace elements in biological systems.

22PCHE33: PHYSICAL CHEMISTRY-III

COURSE OBJECTIVES

- To know the applications of classical thermodynamics in the evaluation properties.
- To learn the concepts of statistical thermodynamics for the study of equilibrium reactions and reaction intermediates
- To derive equations for enthalpy, internal energy, Gibb's energy, entropy in terms partition function.
- To learn the concepts of surface phenomena
- To know the applications of Raman and NMR spectroscopy.

COURSE OUTCOMES

At the completion of this course, the students will be able to

- Calculate the thermodynamic and kinetic properties
- Relate microscopic properties of molecules with macroscopic thermodynamic observables
- Derive the rate equation from mechanistic data
- Utilise the Raman and NMR spectroscopy
- Apply the ESR and Mossbauer spectroscopy for various compounds.

22PCHE34: SCIENTIFIC RESEARCH METHODOLOGY

COURSE OBJECTIVES

- To understand the importance of research and literature sources.

- To gain knowledge about the Chemical Abstract search in Chemical research.
- Acquire knowledge on choosing a research problem and science writing.
- Adequate knowledge on assessing the quality of analytical data.
- Working knowledge on Computer aided literature search.

COURSE OUTCOMES

- The students will be able to acquire knowledge of Literature survey
- Acquire knowledge about thesis writing.
- Acquire knowledge about Research work.
- Identify the importance of errors involved chemical analysis.
- Illustrate the importance of online browsing of literature.

22PCHEO37-2: DAIRY CHEMISTRY

COURSE OBJECTIVES

- To make the students learn about dairy chemistry.
- To understand the importance of milk-lipids, proteins, carbohydrates and vitamins.
- To understand the importance of condensed milk and cream.
- To learn the importance of butter and cheese.
- To understand the importance of the ice-cream and milk product.

COURSE OUTCOME

- Identify the importance of dairy chemistry.
- The students will be able to understand the nutrients of milk.
- Acquire knowledge of milk nutrients.
- Appreciate the importance of butter and cheese.
- Acquire knowledge of ice – creams and milk products.

22PCHEC41: ORGANIC CHEMISTRY- IV

COURSE OBJECTIVES:

- Develop problem solving skills requiring application of chemical reaction.
- To understand the different reagents and their applications.
- To learn the importance of Proteins and nucleic acid
- To learn the chemistry of terpenes and alkaloids and their importance.
- To study about the mechanisms of different rearrangements

COURSE OUTCOMES

The student will be able to

- Develop problem solving skills requiring application of chemical reaction.
- Use important reagents in the modern synthetic methods
- Acquire knowledge of terpenes and alkaloids.
- Elucidate the structure of proteins and nucleic acids.
- Solve problems related to rearrangements.

22PCHEC42: PHYSICAL CHEMISTRY- IV

COURSE OBJECTIVES

- To understand the behavior of electrolytes in solution and to familiarize the structure of the electrode surface and the applications of electrode processes.
- To differentiate electrode kinetics from other types of kinetic studies
- To know the applications of electro analytical Techniques
- To understand the electronic spectroscopy
- To know the applications of Laser devices

COURSE OUTCOMES

At the end of this course, the students will be able

- To analyse the fundamental concepts of atoms and molecules and their arrangements indifferent energy levels by statistical approach.
- To apply the mathematical concepts in chemical systems at molecular level.
- To predict the application of electrical energy in chemical phenomena.
- To understand the laser devices and applications.

22PCHEP46-1: BIOINORGANIC CHEMISTRY

COURSE OBJECTIVES:

- To have a knowledge about protein metallo biomolecules and the role of metal ions in biological process.
- To learn about essential and trace metal ions in biochemical system
- To learn about respiratory proteins and model compounds for oxygen carriers in biological system
- To learn about the nitrogen fixation, biological redox reaction and photosynthesis
- To learn about medicinal bio-inorganic chemistry/chelation therapy.

COURSE OUTCOMES

- To enable the students to understand the importance of trace elements in biological system and also the toxicity of metal ions
- To enable the students to understand the importance of transport heme iron proteins and non heme oxygen carriers
- To enable the students to understand the structure and functions of various types of metallo enzymes and the importance of transport and storage protein in biological systems.
- To enable the students to understand the structure and functions of nitrogenase enzyme and structure of chlorophyll
- To enable the students to understand the importance of medicinal bioinorganic chemistry and chelation therapy.