



Ready for
Every Good Work

SACRED HEART COLLEGE (AUTONOMOUS)

Tirupattur – 635 601, Tamil Nadu, S.India

Resi : (04179) 220103

College : (04179) 220553

Fax : (04179) 226423

A Don Bosco Institution of Higher Education, Founded in 1951 * Affiliated to Thiruvalluvar University, Vellore * Autonomous since 1987

Accredited by NAAC (4th Cycle – under RAF) with CGPA of 3.31 / 4 at 'A+' Grade

Name of the Programme: B Sc. Chemistry

| S No | Title of the Paper | Course Code | Course Objectives | Course Outcomes | Relevance |
|------|--------------------------|-------------|---|--|-------------------------------|
| 1. | ANALYTICAL CHEMISTRY – I | CH117 | <ul style="list-style-type: none">To learn the safety practices and precaution in the laboratory while handling the chemicals and to maintain the laboratory hygiene and to learn the concepts of common waste chemical management.To learn the various separation techniques to analysing the chemicals.To develop the sound knowledge about the chromatographic techniques and its applications.To illustrate the various types of titration and applications of indicators in volumetric analysis.To learn the principle and | <ul style="list-style-type: none">On successful completion of this Course, students will be able toLearn the safety practices in the laboratory while handling the hazardous chemicals.Identify the appropriate separation procedures and its description.Describe the principles of various chromatographic techniques and apply their knowledge to analyze the chemicals with suitable techniques.Explain the concepts and types of titrations and calculate the strength of solutions using various methodology.Outline the principle behind gravimetric analysis, thermal analysis and list out their | Regional, developmental needs |

| | | | | | |
|----|------------------------|-------|---|---|------------------------------|
| | | | <p>applications of different types of thermal analysis and their significance in the analytical chemistry.</p> <ul style="list-style-type: none"> To learn and prepare the solution with different units and find out the accuracy of the concentration. | <p>applications.</p> <ul style="list-style-type: none"> Prepare solutions of desired concentration and employ them in estimations. | |
| 2. | PHYSICAL CHEMISTRY – I | CH217 | <ul style="list-style-type: none"> To understand the important behaviour of gases and liquids Realize the concept of thermodynamics and appreciate the different terminologies used to describe the same Appreciate the differences between real and ideal gases, the laws of thermodynamics and their applications Derive the gas laws based by the kinetic theory of gases and understand the collision theory of gaseous molecule Can describe the measurement of different properties of liquids Estimate the enthalpy changes of chemical processes based on thermodynamics parameters | <ul style="list-style-type: none"> On successful completion of this Course, students will be able to Define the fundamental concepts of thermodynamics, kinetic theory of gases, and the theory of liquid state. Discuss the nature of ideal and real gases, thermodynamic laws, the measurement of various properties in the liquid state, describe Joule-Thomson effect. Use kinetic theory of gases to derive gas laws, apply Hess's Law and Kirchoff's equation; distinguish between different thermodynamic terms, real and ideal gases; apply Linde's and Claudes Process for liquification Calculate various enthalpy changes based on thermodynamic parameters. Formulate the collision theory of gas molecules, describe the measurement of properties of liquid, appraise the difference between C_v and C_p Infer endothermic and exothermic processes, evaluate properties | Regional developmental needs |

| | | | | | |
|----|--|--------|---|---|------------------------------|
| | | | | related to collision of gas molecules and different bond enthalpies | |
| 3. | ALLIED CHEMISTRY-I (MATHS AND PHYSICS) | ACH308 | <ul style="list-style-type: none"> To learn the electronic configuration of atoms, periodicity of elements and Chemical bonding To understand the Structure and bonding of Co-ordination compounds To learn the principles of Organic Chemistry, Organic reactions and mechanism | <ul style="list-style-type: none"> To understand the fundamental concepts of Inorganic chemistry and learn to apply them Explain the shapes and properties of elements based on their periodic properties Compare the different types of bonding and analyses the molecules based on them Explain the concepts of coordination chemistry and compile the role of elements in human body Understand the fundamentals of organic chemistry and classify the compounds Compare different organic reactions and evaluate their applications | Regional developmental needs |
| 4. | ORGANIC CHEMISTRY – III | CH416 | <ul style="list-style-type: none"> Understanding the fundamentals of organic spectroscopy. Understanding Aromatic compounds. Understanding the reactivities of carbonyl compounds. Learning radical reactions. | <ul style="list-style-type: none"> Describe and understand the radical stability and radical reactions of alkyl substituents and benzene Relate and infer information organic molecules using the fragmentation pattern of functional groups by mass and IR spectra Justify the reactivity of aromatic systems and its aromaticity behaviour in benzene ring and heterocyclic systems. Attribute substituted benzene undergoing, nucleophilic aromatic substitution and addition-elimination reactions. Summarize and illustrate relative | Regional developmental needs |

| | | | | | |
|----|---|---------|--|--|------------------------------|
| | | | | reactivities of carboxylic acids and their derivatives <ul style="list-style-type: none"> • Discuss and devise the reaction of acyl halides, anhydrides, and esters | |
| 5. | ALLIED CHEMISTRY LAB WORK (MATHEMATICS AND PHYSICS) | PACH409 | <ul style="list-style-type: none"> • To learn the basics of analysis involved in estimating the amount of substances. • To acquire the practical knowledge about the analysis of organic compounds | <ul style="list-style-type: none"> • Describe and determine the volumetric analysis and preliminary characteristics of organic compounds. • Calculate the concentration of an acid from the volume of base that neutralizes it and also Detect the extra element(s) present in organic compounds • Use the results from a titration experiment to calculate the unknown concentration of a solution and also Identify the functional groups of organic compounds. • Recall how to calculate the number of moles from concentration and volume and also prepare and devising the confirmative experiments based on functional groups. • Recognize the organic compound by comparing their confirmatory test. | Regional developmental needs |
| 6. | PROTEIN CHEMISTRY | CH550B | <ul style="list-style-type: none"> • To learn the chemistry of Amino acids and proteins. • To learn the importance of enzymes and enzyme catalysis | <ul style="list-style-type: none"> • Explain the general concepts of drug design and discovery • Illustrate the essential concepts of SAR/QSAR • Explain the different concepts of computer aided drug design • Demonstrate how receptors and enzymes can act as targets for drug | Regional developmental needs |

| | | | | | |
|----|--|--------|--|---|------------------------------|
| | | | | discovery | |
| 7. | WATER CHEMISTRY AND INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE | CH642E | <ul style="list-style-type: none"> To learn the principles of Water Chemistry and industrial water treatment process To understand the principles and properties of Inorganic materials of Industrial importance. To study the significance and its applications of Inorganic materials of Industrial importance. | <ul style="list-style-type: none"> Identify the water quality parameters learn to calculate them Describe the various processes involved in water treatment and compare them Understand the fundamental processes involved in glass manufacture and apply them for practical applications Differentiate the types of silicates and ceramics and classify them Explain and analyse the forms of cement and fertilizers available and formulate their uses Understand the various types of coatings available and learn to apply them | Regional developmental needs |
| 8. | CHEMISTRY LAB WORK – III GRAVIMETRIC ESTIMATIONS AND ORGANIC ANALYSIS | PCH621 | <ul style="list-style-type: none"> To acquire sound practical knowledge in the gravimetric estimations. To prepare the students for analysing various organic compounds through systematic analysis. To enable the student to understand the principles behind the preparations of different organic compounds. | <ul style="list-style-type: none"> demonstrate the the necessary practical skill to perform quantitative estimation gravimetrically analyze and identify qualitatively the functional group and nature of the given organic compound set-up synthesis of simple organic reactions | Regional developmental needs |