NEHRU MEMORIAL COLLEGE
(AUTONOMOUS)

NATIONALLY ACCREDITED WITH "A" GRADE BY NAAC

PUTHANAMPATTI,TRICHY – 621007

DEPARTMENT OF CHEMISTRY

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COURSE OUTCOME (COS)

Name of the Course	Course Outcomes
CC-1- General Chemistry-I	CO 1: Explain the shapes of orbital based on quantum number and the occupancy of electrons in various quantum levels. CO 2: Discuss the polarization: covalent bonds polarity and non-olarity, types of reactions and Molecular orbital Theory for various molecule. CO 3: Discuss the preparation and properties of alkanes and cycloalkanes. CO 4: Explain the polarization effects and bond fissions. CO 5: Discuss the gaseous laws and properties.
CC-2*- VOLUMETRIC ANALYSIS	CO 1: The distinction between qualitative and quantitative chemical analysis. CO 2: The application of statistical methods for the evaluation of laboratory data. CO 3: Methods for calibration and sampling applied to quantitative analysis. CO 4: The performance of graphical analysis to analyses laboratory results. CO 5: To familiarize the complexometry titration.
CC-3- General Chemistry-II	CO 1: Acquired knowledge about redox reactions, oxides, oxyacids, halogens and interhalogen compounds. CO 2: Learnt thoroughly the preparation, physical, and chemical properties of alkenes, alkynes, and homocyclic aromatic hydrocarbons. CO 3: Taught in the field of electrical and magnetic properties of molecules and also studied about the states of matter like liquid, colloids, gels and emulsion.

	CO 4: To get knowledge about dienes and their stability. CO 5: To familiarize about the colloids and their properties.
Skill Based Subject I - Material Chemistry and Nanotechnology	CO 1: Target knowledge and understanding CO 2: Theoretical and practical knowledge related to modern materials and nanotechnology. CO 3: To develop academic breadth and depth. CO 4: The necessary foundation for training in research. CO 5: The students should able to the skills needed to plan and carry out large scale projects logically and efficiently
CC-4 - GENERAL CHEMISTRY-III	CO 1: Acquired knowledge in the field of position and periodic properties of s-block elements both alkali and alkaline earth metals, diagonal relationship between Li and Mg. CO 2: Learnt extraction, physical, and chemical properties of selected p-block elements like B, C and N families. CO 3: Educated thoroughly both electrophilic and nucleophilic substitution reactions in aromatic hydrocarbons. CO 4; Students should be able to get knowledge in group theory. CO 5: To get knowledge in point group and their properties.

CC-5-Practical-II-Inorganic Micro Scale Qualitative Analysis	CO 1: Types of acid radicals and Basic radicals CO 2: To learn the procedure of radical analysis CO 3: Well trained to analyze simple acid radicals, basic radicals and interfering radicals. CO 4: Get skilled to separate inorganic mixture and identified as individual cations and anions through the experiments. CO 5: Ability to apply in industry
Skill Based Subject II – Chemistry of consumer products	CO 1: Manufacture of candle like household materials. CO 2: Soaps and detergents CO 3: To get knowledge in the manufacture of varnishes and paints CO 4: To acquire knowledge in shave lotion and formulation process. CO 5: To familiarize about the preparation of Hair shampoo in different methods.
CC-6 - GENERAL CHEMISTRY-IV	CO 1: Well educated in p-block elements like oxygen, halogen and noble gas families and get knowledge in inner – transition metals, hydroxyl derivatives. CO 2: Qualified in various types of catalysis and kinetics of the chemical reactions. CO 3: Students should able to know the different types of catalysis and their activity in industries CO 4: To familiarize about homogeneous and heterogeneous catalysis CO 5: To get knowledge about the applications of catalysis in industry

NMEC- I Agricultural Science	CO 1: Acquired knowledge in characteristics of agro ingredients like fertilizers, pesticides, fungicides etc. CO 2: Studied well in the properties of soil, soil formation and how to maintain soil for cultivation. CO 3: To know about soil analysis, get knowledge in required nutrients for soil and pest controlling management. CO 4: To familiarize the classification of pest and safety measurement of pest. CO 5: The students should be able to know about fungicides and herbicides.
CC-7- INORGAMIC CHEMISTRY-I	CO 1: Well qualified in basic and fundamental concepts in coordination chemistry, theories and complexation properties of transition metals. CO 2: The students should be able to understand transition elements and biological importance of transition metals. CO 3: To know about the Applications of coordination chemistry CO 4: The students should be able to Industrial importance of coordination chemistry CO 5: Acquire the knowledge of fuels

CC-8- ORGANIC CHEMISTRY-I	Co 1: Highly developed in three dimensional arrangements of molecules and their orientation towards various chemical constituents. CO 2: Learnt well in the field of optical isomers, geometrical isomers and their selective orientation in enzyme coordination. CO 3: Studied thoroughly the chemistry of carbonyl compounds such as aldehyde, ketone, acids and their derivatives. CO 4: Knowledge assimilated in heterocyclic compounds. CO 5: To familiarize about the polynuclear hydrocarbons.
CC-9- PHYSICAL CHEMISTRY-I	CO 1: State and apply the laws of thermodynamics CO 2: Perform calculations with ideal and real gases CO 3: Predict chemical equilibrium and spontaneity of reactions by using thermodynamic principles. CO 4: Define the phases of matter, describe phases changes and interpret or construct phase diagram Co 5: Define the application of steam distillation.
CC-10- PRACTICAL-III- GRAVIMETRIC AND ORGANIC ANALYSIS	CO 1: Defines the properties of precipitate and precipitating reagents CO 2: Uses the gravimetric calculations CO 3: Identifies the solubility by the systematic method CO 4: Evaluate the analytical data in terms of statistics CO 5: To get knowledge about the instrument UV and Soxhlet

CC-11- PHYSICAL CHEMISTRY EXPERIMENTS AND ORGAMIC PREPARATIONS	CO 1: The preparation for each experiment by studying lab handouts. CO 2: Safety requirements and lab skills to perform physic-chemical experiments CO 3: How to keep records of instruments, parameters and experimental observations. CO 4: Reporting of experimental results in a publication. CO 5: Key experimental techniques including potentiometer, UV – Vis spectroscopy.
ELECTIVE-I- ANALYTICAL CHEMISTRY	CO 1: Explain the theoretical principles and important applications of classical analytical methods within titrations and various techniques within the gravimetric and colorimetric methods. CO 2: Explain the theoretical principles of selected instrumental methods within electro analytical and spectrometric /spectrophotometric methods and main components in such analytical instruments. CO 3: Explain the theoretical principles of various separation techniques in chromatographic and various applications of chromatographic techniques. Understanding computer application for chemistry problems. CO 4: The students should be able to get computer knowledge CO 5: To familiarize computer applications in chemistry
NMEC – II- DAIRY CHEMISTRY	CO 1: Composition, structure or functional relationship and properties of milk, milk components and products. CO 2: Physical, chemical and biochemical changes that occur during processing storage and use of milk

	and milk components CO 3: Chemical, physical, functional and nutritional properties of milk components. CO 4: Objective measurements, analysis and isolation of milk components. CO 5: Experimental demonstration of chemical and physical reactions of milk components during typical processing conditions.
CC-12-INORGAMIC CHEMISTRY-II	CO 1: To get knowledge about the Nuclear stability. CO 2: The students should be able understand Nuclear reactions and its applications CO 3: students should be able get knowledge in metallic bonds. CO 4: Thought in reaction mechanism of metal complexes and organ metallic compounds such as metal carbonyls, metal alkyls and Ferrocene. CO 5: To familiarize applications of organ metallic compounds.
CC-13-ORGANIC CHEMISTRY-II	CO: 1 The students should be able to learn the preparation and reaction mechanism of nitro compounds, Aromatic amines and diazonium compounds. CO: 2 To familiarize the synthesis and reaction mechanism of amino acids, proteins and nucleic acids. CO: 3 To know about the reaction mechanism of phenols CO: 4 Students should be able to get knowledge about synthesis and reaction mechanism of carbohydrates, Terpenes, alkaloids and vitamins. CO: 5 To familiarize the reaction mechanism of various molecular rearrangements.

EC-II – ELECTROCHEMISTRY AND MOLECULAR SPECTROSCOPY	CO: 1 Students should be able to understand the molecular spectroscopy. CO: 2 To know about the principles and applications of microwave spectroscopy. CO: 3 To familiarize the conductance and electrolytes of the solutions. CO: 4 To know about the concentration cells and different types of electrodes. CO: 5 Students should be able to know the principles and applications of UV visible, Raman, IR, NMR and ESR spectroscopy.
ELECTIVE – II –MOLECULAR DYNAMICS	CO: 1 The students able to get knowledge in classical mechanics CO: 2 To get the better understanding in basic in basic principles of quantum mechanics CO: 3 Acquire the concept of statistical thermodynamics CO: 4 To gain knowledge about the photochemistry CO: 5 The students should be able to know about the principles of photochemical kinetics
AC4-ALLIED CHEMISTRY-I FOR PHYSICS	CO: 1 Students should be able to understand the storage and handling of chemicals CO: 2 To know about the basic principles of quantum numbers and electronic configuration of atoms CO: 3 To familiarize the coordination chemistry and various types of fuels and fertilizers. CO: 4 To know about the polar effects and preparation and properties of halogen containing compounds CO: 5 To get knowledge about the unit cell, elements of symmetry, phase rule, laws of photo chemistry and quantum yield.

AC-5-ALLIED CHEMISTRY PRACTICAL FOR PHYSICS, ZOOLOGY AND BOTONY	CO: 1 Students should be able know about the preparation of primary standard solutions. CO: 2 To understand about the estimation acid-base titrations, permanganometry titrations and EDTA titrations. CO: 3 Students should be known about the analysis of organic compounds CO: 4 To familiarize about the preparation of derivative test for respective functional groups. CO: 5 The students should be able to apply lab experience in the industry
AC6-ALLIED CHEMISTRY-II FOR PHYSICS	CO: 1 Students should be able to know about the nuclear chemistry, bonding in metals and preparation properties of compounds of Sulphur. CO: 2 To familiarize about the carbohydrates and amino acids CO: 3 To know about the synthesis and properties of synthetic polymers and heterocyclic compounds. CO: 4 To understand about the types of stereo isomerism. CO: 5 To familiarize about the rate of reaction and mechanism of the reaction

AC4-ALLIED CHEMISTRY-I FOR ZOOLOGY & BOTONY	CO: 1 Students should be able to principles of volumetric analysis and concentration unites of solutions. CO: 2 To know about the quantum numbers and filling of electrons in various energy levels. CO: 3 To familiarize about the IUPAC name of the organic compounds, different types of isomerism and preparation and properties hetero cyclic compounds. CO: 4 To know about the carbohydrates, amino acids and proteins. CO: 5 To familiarize about the surface chemistry and the preparation and properties of polymers.
AC6-ALLIED CHEMISTRY-II FOR ZOOLOGY & BOTONY	CO: 1 Students should be able to know about the bonding in molecules and molecular orbital's of molecules and ions CO: 2 To familiarize about the coordination chemistry and magnetic properties of matters CO: 3 To know about the nucleic acids, antibiotics and water chemistry CO: 4 To understand the colloids and theories of acid and bases. CO: 5 To know about the laws of photo chemistry and quantum yield.