NEHRU MEMORIAL COLLEGE (AUTONOMOUS)

NATIONALLY ACCREDITED WITH "A" GRADE BY NAAC

PUTHANAMPATTI,TRICHY – 621007

DEPARTMENT OF CHEMISTRY

PG

COURSE OUTCOME (COS)

Name of the Course	Course Outcomes
CC-I- INORGANIC CHEMISTRY -I	CO: 1 To know the structure and bonding in molecules/ions and predict the structure of molecules/ions. CO: 2 To learn the different definition of acids/bases and predict the reactions between acids and bases. CO: 3 To know the preparation and reactions of Boron group elements. CO: 4 To learn the selected crystal structure and to explain what kind of parameters that affects the crystal structure of the compound. CO: 5 To become familiar with some application of oxy acids of Sulphur, phosphorous and interhalogen compounds.
CC-II - ORGANIC CHEMISTRY -I	CO: 1 To learnt the nomenclature of the hetero nuclear aromatic compounds. CO: 2 To learnt the concept of stereochemistry and its importance CO: 3 To know what is aliphatic nucleophilic substitution. CO: 4 To familiarize the various types of aliphatic nucleophilic substitution reaction and their mechanism. CO: 5 To know the aliphatic electrophilic substitution reactions and their mechanisms and the concept of aromaticity.

CC-III - PHYSICAL CHEMISTRY -I	CO: 1 To study symmetry elements and symmetry operations. CO: 2 To know the orthogonality theorem and its consequences CO: 3 To learnt the determination of IR and Raman activity of vibrational modes in nonlinear molecules and to study selection rules for electronic transition. CO: 4 To know the detail study of Simultaneous reactions and study the kinetics of different types of reactions CO: 5 To learnt the reaction rate theories and reactions in solution and to know the concept of activity and activity coefficients and determination of activity coefficients.
CC-IV- ORGANIC CHEMISTRY PRACTICAL-I	CO: 1 To familiarize the solubility nature of organic substance of different functional group. CO: 2 To learnt the pilot separation of bimixtures CO: 3 To familiarize the systematic procedures of organic substance analysis CO: 4 To learnt two stage preparation involving nitration and bromination and involving molecular rearrangement oxidation. CO: 5 To learnt the preparation of derivative all functional groups and know the techniques involving drying and Recrystallization

CC-V - PHYSICAL CHEMISTRY PRACTICAL-I	CO: 1 To the preparation for each experiment and links therein. CO: 2 To know about the safety requirements and lab skills to perform physic-chemical experiments. CO: 3 Methods to measure equilibrium concentration and equilibrium constants for acid- base, solubility and complexation reactions by varying concentration and temperature CO: 4 To the preparation of buffer solutions at a required pH, given a choice of solution of acid/conjugate base pairs CO: 5 To know the principle and mechanism of conductometric and potentiometric titrations.
CC-VI- INORGANIC CHEMISTRY - II	CO: 1 To be able to use Crystal Field Theory to understand the magnetic properties of coordination compounds. CO: 2 To be able to describe the stability of metal complexes by the use of formation constants and to calculate thermodynamic parameters CO: 3 To become familiar with some applications of coordination compounds and to be able predict the geometries of simple molecules. CO: 4 To be able recognize the types of isomers in coordination compounds. CO: 5 To familiarize the preparation and properties of organometallic compounds.

CC-VII- ORGANIC CHEMISTRY - II	CO: 1 To learnt about the some specific examples of elimination reactions. CO: 2 The students should be able to know the basic mechanism of oxidation reactions CO: 3 To become familiarize the conformational analysis and dynamic stereo chemistry CO: 4 To know about the preparation and properties of carbohydrate, protein and peptides CO: 5 The students should be able to know about the nucleic acid and structure of DNA and RNA
CC – VIII - INORGANIC CHEMISTRY PRACTICAL-I	CO: 1 Well trained to analyze simple acid radicals, basic radicals and interfering radicals. CO: 2 Get skilled to separate inorganic mixture and identified as individual cations and anions through the experiments. CO: 3 To know the colorimetric experiments and analysis the colored solutions. CO: 4 To gain knowledge in analysis of inorganic mixture CO: 5 To get analyzing capacity of inorganic samples.
CC-IX- PHYSICAL CHEMISTRY PRACTICAL - II	CO: 1 The students should be able to know about the distribution law and principles of CST experiment. CO: 2 To familiarize the conductometric titrations. CO: 3 To know about the determination of activity and activity coefficient. CO: 4 To get knowledge about the adsorption properties.

	CO: 5 To familiarize the critical solution temperature
EC-I – (ELECTIVE COURSE) ADVANCED TOPICS IN PHYSICAL CHEMISTRY	CO: 1 The students should be able to know about the basics concept of quantum mechanics and orthogonality theorem CO: 2 To learnt about the application of wave mechanics and approximation methods. CO: 3 To understand the molecular spectroscopy CO: 4 To familiarize the basic principles, instrumentations and applications of IR, NMR and ESR spectroscopy CO: 5 To know the detail study of the photo chemistry and Radiation chemistry.
OEC – I*(OPEN ELECTIVE COURSE) GREEN AND INDUSTRIAL CHEMISTRY	CO: 1 The students should be able to understand the environment eco system, food chain and environmental pollutions CO: 2 To know about the green chemistry and water management and waste management. CO: 3 To learnt about the water chemistry and chemistry of explosive CO: 4 The students should be able to know about the Rupper, plastics and polymers. CO 5 To leant about the types of fuels and manufactures
OEC-I*(OPEN ELECTIVE COURSE) FORENSIC SCIENCE	CO: 1 The students should be able to understand the introduction to forensic science and collection of sampling CO: 2 To know the detail study of classification and techniques of finger printing CO:3 To familiarize biological sampling and know about the structure of blood and hemoglobin CO: 4 To know about the types of poison and analytical procedure. CO: 5 To clear understand about the types of drug dependence.

CC-X- INORGANIC CHEMISTRY – III	CO: 1 The students should be able to know about the principle, instrumentation and applications of electronic spectroscopy CO: 2 To familiarize the principle and applications of EPR spectroscopy CO: 3 To learnt about the Macrocyclic molecules and catalysis CO: 4 To understand the principles, analytical techniques and applications of TLC, HPLC, TGA, DTA , SEM and TEM CO: 5 To familiarize the Bioinorganic chemistry reaction mechanism and its applications.
CC-XI - ORGANIC CHEMISTRY -III	CO: 1 To learnt the addition and carbon-carbon multiple bon reactions and mechanisms CO: 2 To understand the properties of protecting functional groups CO: 3 To know about the principles and reaction mechanisms of retrosynthesis CO: 4 To know about the Nuclear magneticresonance spectroscopy, proton chemical shift, spin-spin coupling, coupling constants and application to organic structures ^{13}C resonance spectroscopy CO: 5 To learnt about the synthesis and reactions of alkaloids and Terpenes
CC – XII - PHYSICAL CHEMISTRY – III	CO: 1 The students should be able to understand the derivation of Maxwell – Boltzmann distribution equation. CO: 2 To know about the derivation of quantum statistics. CO: 3 To learnt about the quantum mechanical

	applications of Molecular orbital theory and hybridization of molecules. CO: 4 To familiarize the nanoscience and nanotechnology CO: 5 To know the various types of errors and linear regression and standard deviations.
CC-XIII - INORGANIC CHEMISTRY PRACTICAL- II	CO: 1 To know about the volumetric and gravimetric analysis of cations and anions. CO: 2 Making informal choice among post graduate opportunities for work or further Education. CO: 3 To know how to characterize products by physical and spectroscopic methods. CO: 4 To learnt the preparations ofpotassium and cobalt complexes. CO: 5 To familiarize the gravimetricand Titrimetric estimation ofmetal ions.
CC-XIV- ORGANIC CHEMISTRY PRACTICAL-II	CO: 1 To know about the estimation of phenol, aniline. CO: 2 To learnt about the estimation of saponification of oils and iodine vaue of oils CO: 3 To prepare p-bromo acetanilide from aniline CO: 4 To prepare 1,3,5- tribromobenzene from benzene . CO: 5 To familiarize the Preparation of p-nitroaniline fromacetanilide.
EC-II – INSTRUMENTATION AND MATERIAL CHEMISTRY	CO: 1 The students should be able to learn about the structural elucidation of simple molecules and ions. CO: 2 To learnt about the applications of mass bauer spectroscopy. CO: 3 To know about the principles of NQR spectroscopy

	CO: 4 To learnt about the principles of X-ray diffraction studies. CO: 5 To familiarize the radioactive decay and isotopic dilution methods.
EC-III- SPECIAL TOPICS IN ORGANIC CHEMISTRY	CO: 1 The students should be able to know about the fundamental concept of Jablonski diagram CO: 2 To know about the photo chemical rearrangement reactions. CO: 3 To know about the basic principles and mechanisms of pericyclic reactions. CO:4 To learnt about the basic properties and reaction mechanisms of heterocyclic compounds CO: 5 To familiarize about the principles of mass spectroscopy and ORD and CD.
EC- IV – (ELECTIVE COURSE) – ELECTRO AND SURFACE CHEMISTRY	CO: 1 The students should be able to understand the basic theories at the electrolyte-electrode interfaces. CO: 2 Outline electrochemical principles in corrosion and energy storage CO: 3 To know about the solubility product, common ion effect and neutral salt effects. CO: 4 To familiarize about the principles of chemisorption and physisorption. CO: 5 To know about the role of surface in catalysis and photo catalysis.