Department of Chemistry

M.Sc. Chemistry

S.No.	Course Code	Course Name	Course Outcomes
		SEMESTER- I	
1.	18PCHC11	Core Course I: Concepts - Reaction Mechanism and Stereo Chemistry	1. Get an Idea About The Basic Concepts of Organic Chemistry And Enhance The Knowledge on Chemical Reactivity By Theoretical Approach. 2. Enhance The Ideas About Order, Molecularity, Kinetics of Organic Reactions and its Kinetic Measurement and quantitative calculation of unknown compounds reactivityfrom the known data. 3. Gain Knowledge, mechanisms and applications of Various Aliphatic, AromaticSubstitution Reactions and Electrophilic Substitution Reactions. 4. Understand The Concepts of Chirality and its Operations in Organic Molecules Enhance its Application to various Natural Products. 5. Knowing The Concepts of Asymmetric Synthesis and Geometrical Isomerism to Synthesise Active Compounds. 6. Understand The Concepts of Conformation and its Application to Various Organic Molecules in Biological Chemical Fields. **7.** Enhance The Knowledge on Stereo Chemical Aspects of Organic Compounds.
2.	18PCHC12	Core Course -II: Bonding, Solid State and Term Symbols	1. Understand the Concepts of Various Types of Solids and its Properties. 2. Deepen the Ideas of Properties of Solid into its Various Applications. 3. Understand the Concept of Theories on Chemical Bonding and its Usage in the Structure Detection of Inorganic Molecules. 4. Know The Concepts Involved in the Inorganic Polymer and Conducting Inorganic Polymers and Increase the Ideas of Electron Deficient Molecules,

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			Cluster Compounds and its Chemical Reaction. 5. Know the Various Concepts of Acids and Bases, its Applications. 6. Understand the Concepts of Non-Aqueous Solvents and Term Symbols.
3.	18PCHC13	Core Course - III: Thermodynamics and Electrochemistry	1. Understand the Concept of Laws of Thermodynamics and its Need in Chemistry. 2. Increase the Knowledge on the Need of Partial Molar Properties and Its Derivation,Irreversible Thermodynamics. 3. Deepen the Ideas of Statistical Thermodynamics By Various Statistical Theory and HeatCapacity Theories. 4. Gain Knowledge on Various Types of Conductance, Conductance Measurements and itsApplication. 5. To Know the Concepts of Electrolyte, Electrolysis and its Law, the Various ConceptsSuch as Common Ion Effect, pH Measurement. 6. To Gain the Knowledge on Indicators and the Theories Behind Indicator. To Deepen the Idea of Theory of Strong Electrolyte and its Derivation
4.	18PCHO11	Major Elective Course-I: Drug Design and Discovery	1. Ability to Understand terms involved in Drug Design. 2. Enrich the Knowledge on Various Steps involved in Drug Discovery and its MolecularInteractions. 3. Gets an Idea about Retro Synthesis in Drug Designing. 4. Ability to Understand Computer Aided Drug Designing. 5. Understand the ideas of Quantum Computing Drug Design. 6. Enhance the Knowledge on Drug Designing.
5.	18PCHO12	Major Elective Course-I: Green Chemistry	1. Understanding The Requirement of Global Needs to Reduce the Pollution Created by theVarious Chemical Industries. 2. New Method of Way and Technology for the Greener Environment and the BasicPrinciple of Green Chemistry.

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			3. Awareness about the Atom Economy of the Reaction and its Improvement for the HigherEfficiency of the Reaction. 4. Enrichment of Modern Technology like Microwave, Sonochemistry, One Pot Synthesis,Water Medium and the Solvent Free Medium. 5. Role of Greener Solvents, Catalyst and its Importance in the Synthetic Chemistry. 6. Techniques to Know the Reduction of Multistep Synthetic Process into one Pot Synthesiswith Minimium Amount of Waste Disposal.
6.	18PCHO13	Major Elective Course-I : Computer Applications in Chemistry	1. Understand the Fundamental Concepts in C-Language. 2. Apply the C-Program to Calculate Various Parameters involved in Chemistry. 3. Understand the Basic Concepts of Chemdraw and Applications. 4. Gain the Basic Knowledge of Origin Software and its Applications. 5. Enhance the Knowledge of Application Oriented Chemistry Software Like Chem-3D,Scifinder. 6. Enrich the Knowledge on MS-Office, Powerpoint and Internet.
7.	18PCHC1P	Core Course IV: Organic Chemistry Practical - I	1. Learn the Importance of Quantitative and Qualitative Organic Analysis. 2. Enhancing the Skill for the Estimation through Iodometric Analysis and Bertrand's Method. 3. Report the Sample in a Systematic Way of Proceedings. 4. Knowing the Concept involved in the Multistep Synthesis. 5. Preparation of Disubstituted and Trisubstituted Organic Compound. 6. Applying the Knowledge of Directive Influencing Effect in the Organic Compound Preparation. Learn How to Convert the Monosubstituted Compound into Di and Tri Substituted Compound

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8.	18PCHC1Q	Core Course - V: Inorganic Chemistry Practical - I	1. Mastering the Techniques involved in the Qualitative Analysis. 2. Gets an idea About the Analysis involving Mixture of Familiar and Less FamiliarCations. 3. Learn the Importance of Group Separation for the Analysis of Cation. 4. Gaining the Way of reporting the Mixture in the Ordered Form. 5. Enrich the Skill to Identify the Cation by the Systematic Procedure. 6. Separation of Mixture of Metal ion through Volumetric Estimation.
SEMESTER - II			
9.	18PCHC21	Core Course – VI: Reaction Mechanism and Natural Products	1. Understanding the Concepts of Various Types of Rearrangement Reactions involved inOrganic Chemistry. 2. Enhance the ideas of Rearrangement Reactions into C-C, C-O, C-N Migration Reactions. 3. To Increase the Knowledge on Electrophilic and Nucleophilic Addition Reactions and ItsStereo Chemical Aspects. 4. Deepen the Ideas of Elimination Reactions and its Stereo Chemical Aspects into VariousTypes of Elimination Reactions. 5. Get ideas of the Classification of Terpenes and Structural Elucidation of SpecificTerpenoids. 6. Understand the Structure and Synthesis of Various Vitamins.
10.	18PCHC22	Core Course – VII: Coordination and Bioinorganic Chemistry	1. Apply the CFT and MO Theory for the Determination of Geometry of the Complexes. 2. Learn to Construct the MO Diagram for Sigma and Pi Bonded Complexes. 3. Intrepration of the Stability of Complex through EAN Rule. 4. Gain the Proficiency and Interpretation of Reaction Mechanism of Complexes. 5. Sketch the Multicentre Bonding Nature of Organometallic Compounds.

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			6. Gain the Knowledge in Applying Organometallic Compounds in the Synthesis ofPetrochemical Products at the Large Scale.
11.	18PCHC23	Core Course –VIII: Quantum Mechanics, Macromolecules and Equilibria	1. To Understand the Basic Concepts of Quantum Chemistry such as Operators, UncertaintyPrinciple. 2. To Know the Ideas of Postulates of Quantum Mechanics, Eigen Function, OrthonormalSet. 3. To Apply the Concepts of Quantum Mechanics into Particle in a Box, Ring, RigidRotator. 4. To Gain Knowledge on the Quantum Mechanical Concepts by Hydrogen Atom Problem,Shapes of Various Atomic Orbitals. 5. To Introduce the Concept of Phase Equilibria and its Application to Various oneComponent and Two Component System. 6. To Know the Concepts of Chemical Equilibrium and Various Relations involved inChemical Equilibrium.
12.	18PCHN21	Non-Major Elective Course: Chemistry for Healthy Living	1. Understand the Basic Concepts of Proteins. 2. Ability to Understand the Importance of Carbohydrate. 3. Able to Know the Analysis of Oils, Fats and Know the Economic Role of Oil Industries. 4. Gain the Knowledge on the Function of Enzymes. 5. Develop the Knowledge on Role of Vitamins in our Body. 6. Learn the Food Poisoning and First Aid to Food Poisoning.
13.	18PCHC2P	Core Course IX - Inorganic Chemistry Practical - II	1. Mastering the Techniques Involved in the Qualitative Analysis. 2. Know How to Synthesis Inorganic Complex and its Condition to Maintain the Stabilityof it.

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			3. Separation of Mixture of Metal ion through Volumetric Estimation through precipitationmethod. 4. Importance of Complexing agent and the Role of Buffer Solution in the Precipitation ofMetal ion. 5. Develop the Ideas of Gravimetric Estimations for the individual ion in the mixture ofions without the interference of other. Gain the Knowledge of the condition for synthesizing the Coordination Complexes
14.	18PCHC2Q	Core Course - X : Physical Chemistry Practical - I	1. Pursuing the Role of Potentiometric Method to Study pH of the Buffer Solution. 2. Ability to Know the Solubility Product of Sparingly Soluble Salt through PotentiometricMethod. 3. Enrich the Concept of Precipitation Titration of Halide Mixture *Via* Potentiometry. 4. Finding the Strength of the Mixture of Acid through Conductometric Method. 5. Impact of the Conductivity and Potentiometry Methods to Study the Electrical Propertiesof the Ionic Substance, Acids and Bases. 6. Interpretation of the Potentiometric Curve through First Order Derivative and SecondOrder Derivative.
SEMESTER - III			
15.	18PCHC31	Core Course– XI: Organic Spectroscopy, Reagents and Synthetic Methods	1. To gain the knowledge about UV and IR radiation and their applicationsin elucidating thestructure. 2. To understand the significance of PMR and to elucidate the structure of organicmolecules. 3. To understand the concept of mass spectroscopy and its fragmentation rule to find out themolecular weight and fragmentation pattern. 4. To know the application of Oxidation and reduction process in simple

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			and complexorganic molecules. 5. To create an idea about starting materials for the synthesis of simple and complexmolecules. 6. To Know the concept of organic molecule activation and blocking the functional groups.
16.	18PCHC32	Core Course – XII: Physical Methods in Inorganic Chemistry	1. Enrich the knowledge to interpret the electronic spectra of transition metal complexes. 2. Understanding the binding of ligand through IR studies and structural elucidationof iron and tin complexes through Mossbauer spectra. 3. Acquire knowledge in solving the structural problem of compounds usingnmr spectroscopy. 4. Gain familiarity in elucidate the structure of paramagnetic complexes usingESR spectroscopy. 5. Identification of energy levels of compounds through photoelectron spectroscopy. 6. Gain indepth knowledge about the photochemical reactions of metal complexes
17.	18PCHC33	Core Course – XIII: Group Theory and Spectroscopy	1. Gain knowledge on symmetry elements, point group and character table. 2. Develop the concepts of basic group theory in to various spectroscopy technic theoreticalanalysis. 3. Understand the concepts of quantum mechanics with group theory and HMO calculation. 4. Ability to understand the concepts of rotational spectroscopy and Infrared spectroscopy. 5. Gain knowledge of Raman spectroscopy, NQR and concepts involved.

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			6. Able to know the basics and advanced concepts involved in NMR and EPR.
18.	18PCHO31	Major Elective Course-II: Geo Chemistry	1. Learning about the geochemical cycle and the hydrosphere of the universe. 2. Gaining idea in the availability of minerals and water resources in the universe. 3. Enhance the analytical technique of analyzing the rock material in the earth. 4. Applying the knowledge of volumetric analysis for the material analysis. 5. Knowing the sources of ground water and its quality. 6. Getting the awareness about the fuel sources in india. Impact of the remote sensor system for the satellite launching and its operation
19.	18PCHO32	Major Elective Course-II: Nano Chemistry	1. Learning about the evolution of nano materials from nature. 2. Gaining idea in the potential uses of nano materials. 3. Knowing the kinetically confined synthesis of nano materials. 4. Applying the knowledge of instrumentation technique to characterize nano material. 5. Knowing the types of nano material and their application in various fields. 6. Getting the awareness about the nano biosensors and their diagnostic application. 7. Understanding the application of the nano medicine and molecular nano machines inmedical field.
20.	18PCHO33	Major Elective Course-II : Research Methodology	1. Learning the methods involved in the research methodology. 2. Knowing the methods of literature survey through various technics. 3. Identification of popular journals in chemistry and its importance. 4. Learn about the thesis writing method and its presentations. 5. Earned the method of writing the thesis in the universal format. 6. Knowing the e-learning technics for writing the paper in the journal.

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			7. Learning the pattern methods.
21.	18PCHC3P	Core Course XIV: Organic Chemistry Practical - II	8. Learn the Importance of Qualitative Organic Analysis. 9. Enhancing the identification of functional group present in the organic compounds. 10. Report the Sample in a Systematic Way of Proceedings. 11. Applying the Knowledge of preparation of derivative of Organic Compound.
22.	18PCHC3Q	Core Course - XV: Physical Chemistry Practical - II	1. Pursuing the Role of Potentiometric Method to Study redox titration. 2. Ability to Know the Dissociation constant of weak acid through Potentiometric andConductometric Method. 3. Enrich the Concept of Adsorption study. 4. Finding the Strength of the Mixture of Acid chloride through Conductometric Method. 5. Interpretation of the Kinetics study. 6. Enrich the skill to develop the precipitation titration.
SEMESTER - IV			
23.	18PCHC41	Core Course – XVI: Photochemistry and Natural Products	1. To know the structure, biological significance and applications in biological system. 2. To understand the significance of various photo chemical reactions and to appliedknowledge to prepare simple and complex molecules by photo chemical method. 3. To know the various methods to extract alkaloids and understand the structure and itsapplications. 4. To understand the structure of various steroids compounds and their biological importantin Human being. 5. To gain the knowledge about the structure and their role to cure the various

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			diseases. To understand the protein structure and genetic materials in biological system.
24.	18PCHC42	Core Course –XVII : Nuclear and Organometallic Chemistry	1. Enrich the knowledge about parity, radioactivity secular and transient equilibria. 2. Understanding the applications of radioactive isotopes in various fields. 3. Acquire knowledge about compounds containing porphyrin ring system, mechanism ofphotosynthesis, biological functions of copper containing proteins and copper enzymes. 4. Gain familiarity in inhibition, poisonoing of the enzymes. 5. Enrich the awareness in chemotherapy and radiotherapy. 6. Expertise in anti rheumatic agents and psychopharmacological drugs. 7. Learn the structure and function of biological membranes and minerals in diet.
25.	18PCHC43	Core Course – XVIII: Chemical Kinetics and Surface Chemistry	1. Enhance the concept of activation energy and activated complex by collision theory andgain the knowledge on collision theory and absolute reaction rate theory. 2. Deepen the basic ideas of molecularity by the study of various theories. 3. Enhance the knowledge on mechanism and kinetics of chin reaction and the applicationof steady state treatment. 4. Develop the theoretical knowledge on primary and secondary salt effect and kinetics offast reaction by different techniques. 5. Gain proficiency in the theoretical aspects of homogeneous and heterogeneous catalysisand enhance the ideas of enzyme catalysis and acid-base catalysis. 6. Understand the characteristics and terms involved in adsorption. 7. Gain knowledge on various adsorption isotherms, B.E.T equation and

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			applications ofadsorption in everyday life.
26.	18PCHC4P	Core Course- XIX: Practical in Computational Chemistry	1. Knowing the importance of the various physical properties by practical. 2. Skill to determine the molecular weight of unknown substance by Rast method. 3. Pursuing the role of phase diagram to understand the simple eutectic method. 4. Improving skill on distribution properties. 5. Impact of the potentiometric method to study the redox reactions. 6. Develop the skill on thermo chemical experiments.
27.	18PCHJ41	Core Course – XX: Project / Review of Recent Aspects of Chemistry	1. Understanding the way about the literature survey. 2. Enhance the knowledge about published research works. 3. Learning the way of thesis writing. 4. Exploring the presentation skill of research work. 5. Articulate the interdisciplinary research work. 6. Knowing the instrumentation techniques for the research work. 7. Developing the skill to analyse the sample through the instrumentation techniques. 8. Apply the knowledge of theory to construct the scheme in research in the various fields.