Bachelor of Science
Subject: Chemistry

Program Specific Outcomes

1. **Domain Knowledge:** Explaining fundamental scientific principles and techniques to spark interest in both basic and advanced knowledge in the field of chemistry.
2. **Scientific Thinking:** Fostering scientific consciousness and thinking, acquiring the ability to select the essential modern methods, abilities, and instruments.
3. **Problem Analysis:** Using analytical approach, math, scientific disciplines, and natural sciences to identify, formulate, analyse, and search for systematised solutions to complicated issues.
4. **Technical and Ethical Awareness:** To instill the ability to use technical expertise in assessing various prospects and to inspire the value needed for teamwork.
5. **Environmental & Sustainable Development:** Understanding how scientific advancements affect societal and environmental circumstances shows an understanding of the necessity of sustainable development.
6. **In-hand Practical Expertise:** Gaining information and the possibility to improve one's practical and handling abilities.
7. **Research Related Skills:** Knowing the fundamental techniques to upskill and augur their approach towards research.
8. **Employability Skills:** Ability to develop positive practical skill, administrative skills, presenting skills, learning skills, adaptability, resilience, ability to operate under pressure, etc.

I Year / Certificate Course

COURSE TITLE	COURSE LEARNING OUTCOMES
FUNDAMENTALS OF CHEMISTRY **S1-CHEM-1T** ***Major-I***	***By the end of this course, students will learn the following aspects and concepts of chemistry:*** 1. Ancient Indian chemical techniques 2. Various theories and principles applied to reveal atomic structure 3. Significance of quantum numbers 4. Concept of periodic properties of elements, concept of nuclear charge, ionisation energy, electron affinity, and different parameters 5. Know the significance of alkali and alkaline earth metals in biological systems 6. Theories related to chemical bonding (VSEPR Theory) 7. Understand the different theories related to acids and bases, pH, and buffers 8. Fundamentals of organic chemistry, factors responsible for Reactivity, and Stereochemistry of Organic Compounds 9. Basics and fundamentals of chemical kinetics, rate of reaction, rate constant, and factors affecting the rate of reaction 10. Properties of electrolytes
ANALYTICAL CHEMISTRY **S1- CHEM -2T** ***Major-II / Minor / Open Elective***	***By the end of this course, students will learn the following aspects and concepts of chemistry:*** 1. Basic concepts of mathematics for chemists: Logarithm, Differentiation, and Integration 2. Fundamentals of analytical chemistry and steps involved in analysis 3. Learn about different non-aqueous solvents and be able to use their knowledge in analytical chemistry. 4. Basic knowledge of computers for chemists 5. Basic concepts and principles of Chemical Equilibrium 6. Principles of Chromatography and Chromatographic Techniques 7. Various Spectroscopic techniques for the identification and characterization of unknown compounds

COURSE TITLE	COURSE LEARNING OUTCOMES
QUALITATIVE AND QUANTITATIVE CHEMICAL ANALYSIS (PRACTICAL) **S1- CHEM -1P** ***Major-I (Practical)***	***By the end of this course, students will learn the following aspects of laboratory exercises in chemistry:*** 1. Importance of chemical safety and lab safety while performing experiments in the laboratory 2. Qualitative inorganic analysis 3. Elemental analysis of organic compounds (non-instrumental) 4. Qualitative identification of functional groups of organic compounds 5. Techniques for pH measurements 6. Preparation of buffer solutions
ANALYTICAL PROCESSES AND TECHNIQUES (PRACTICAL) **S1- CHEM -2P** ***Major-II / Minor / Open Elective (Practical)***	***By the end of this course, students will learn the following aspects of laboratory exercises in chemistry:*** 1. Concepts and analytical methods in chemistry 2. Preparation of solutions of different concentrations 3. Standardisation of the Solution 4. Identification of organic compounds by Chromatography 5. Analysis of Spectral Techniques

II Year / Diploma Course

COURSE TITLE	COURSE LEARNING OUTCOMES
REACTIONS, REAGENTS AND MECHANISMS IN ORGANIC CHEMISTRTY **S2- CHEM -1T** ***Major-I***	***By the end of this course, students will learn the following aspects and concepts of chemistry:*** 1. Various organic reactions, reagents, and their mechanisms will be helpful for understanding organic synthesis 2. Application of the reaction in various industries like Pharmaceuticals, Polymers, Pesticides, Textiles, Dyes, etc. 3. Important key reactions used in further study and research work
TRANSITION ELEMENTS, CHEMI-ENERGETICS, PHASE EQUILIBRIA **S2- CHEM -2T** ***Major-II / Minor / Open Elective***	***By the end of this course, students will learn the following aspects and concepts of chemistry:*** 1. Introductory idea about Traditional Indian Chemistry 2. Chemistry of d and f-block elements, basic concepts of Coordination Chemistry 3. Stereochemistry of Transition Metal Complexes 4. The Laws of Thermodynamics 5. Concepts of Phase Equilibrium with reference to Solid Solutions, Liquid-Liquid Mixtures, and Partially Miscible Liquids 6. Basic concepts of Electrochemistry
ORGANIC QUALITATIVE ANALYSIS, REACTIONS, AND SYNTHESIS (PRACTICAL) **S2- CHEM -1P** ***Major-I (Practical)***	***By the end of this course, students will learn the following aspects of laboratory exercises in chemistry:*** 1. To perform various reactions, which will be helpful in understanding organic synthesis 2. To use reagents to perform organic reactions 3. To perform rearrangement reactions 4. To prepare various organic compounds 5. To use the Chromatographic technique to monitor organic reactions 6. Applications of the reactions in the industries, e.g., Pharmaceuticals, Polymers, Pesticides, Textiles, Dyes, etc. 7. These experiments will also be useful for further study and research

COURSE TITLE	COURSE LEARNING OUTCOMES
METAL COMPLEX, PREPARATION, THERMOCHEMISTRY AND PHASE EQUILIBRIA EXPERIMENTS (PRACTICAL) **S2- CHEM -2P** ***Major-II / Minor / Open Elective (Practical)***	***By the end of this course, students will learn the following aspects of laboratory exercises in chemistry:*** 1. Preparation of Inorganic Metal Complexes 2. Use of a calorimeter for thermodynamic experiments 3. Determination of the enthalpy of various systems and reactions 4. Experiments on Phase Equilibria 5. Constructions of Phase Diagrams 6. Study of reaction Equilibrium

III Year

COURSE TITLE	COURSE LEARNING OUTCOMES
PHYSICAL CHEMISTRY **BSC1Y312**	***By the end of this course, students will learn the following aspects and concepts of chemistry:*** 1. Solve the Schrödinger Wave Equation to obtain wave functions 2. Application of the Schrödinger Wave Equation to find out the allowed energy level of atoms 3. Role of Microwave Spectroscopy in the determination of Molecular Structure, Dipole Moment, and Bond Length 4. Role of Vibrational Spectroscopy in functional group identification 5. Different photochemical processes through the Jablonski Diagram 6. Different photochemical reactions of simple organic compounds 7. Different magnetic behaviours of molecules and the different techniques of measuring Dipole Moments
INORGANIC CHEMISTRY **BSC1Y313**	***By the end of this course, students will learn the following aspects and concepts of chemistry:*** 1. HSAB principle and trends of acidity and basicity in the periodic table 2. Syntheses, reactions, and applications of Silicones and Phosphazenes 3. Bonding in metal complexes through VBT, CFT, and splitting of d-orbital 4. Recognise how the splitting and stability of d-orbitals in complexes are affected by octahedral, tetrahedral, and square planar geometries 5. Relationship between the electronic arrangement and magnetic behaviour of complexes 6. Magnetic Moment and its determination through different methods 7. Calculate the Ground State Term Symbol for different electronic systems and understand the spectroscopic notations 8. Role of ligands in the appearance of the colour spectrum of complex and electronic spectra through the Orgel diagram 9. Importance of elements in biological systems and the mechanism of functioning of metal-coordinated biomolecules 10. Application of these metal-coordinated biomolecules in electron transfer mechanisms, toxicology, as diagnostic agents, etc.

COURSE TITLE	COURSE LEARNING OUTCOMES
ORGANIC CHEMISTRY **BSC1Y314**	***By the end of this course, students will learn the following aspects and concepts of chemistry:*** 1. Basic principle and concepts of NMR Spectroscopy to interpret the simple NMR spectrum of organic compounds 2. Different methods for the synthesis of Grignard Reagent, Organo-Lithium, Organo-Sulphur, And Organo-Zinc compounds 3. Different kinds of polymers, their synthesis, and their uses at the industrial level for various applications 4. Basics, types, structure, functions, reactions, and stereochemistry of carbohydrates and their monomers 5. Mechanism of the cleansing action of soap and detergents and be able to apply the knowledge of this mechanism at the industrial level 6. Essential and non-essential amino acids, structure, stereochemistry, and functions of amino acids and proteins 7. Composition of nucleic acids and be able to distinguish the structural features of RNA and DNA 8. Basics, types, synthesis, and reactions of different dyes at the industrial level 9. Different pericyclic reactions and the rules governing these reactions
LAB WORK (PRACTICAL) **BSC1Y312(P)**	***At the end of the lab work, a student will be able to:*** 1. Estimate the hardness of water and perform different types of titrations. 2. Verify the Lambert-Beer law. 3. Separate green leaf pigments and dyes using chromatography.

Master of Science in Chemistry

Program Specific Outcomes

Programme specific outcomes pertain to exploration of knowledge of Chemistry with related disciplines. A student of school of Chemistry after acquiring Master of Science degree will be able to:

1. Calibrate his/her thinking skills with the sound objective of problem solving at the forefront, on the basis of exposure to the curriculum-based knowledge of Chemistry
2. Display greater respect to the cause-effect relationship which eventually creates new avenues and designs innovative pathways
3. Integrate creative learning in his/her day-to-day activities with the needed confidence to embrace challenges
4. Demonstrate broad mindedness with respect to knowledge penetration vis-a-vis knowledge accumulation in his /her professional activities
5. Explore global level research opportunities for doctoral and post-doctoral studies
6. Avail the benefit of enormous job avenues in different domains such as academics, pharmaceutical industries, analytical laboratories, scientific organizations, entrepreneurship, administrative positions etc.
7. Display their true potential and get appropriate endorsement through qualifying NET/GATE/SET/State Civil Services and other competitive examinations
8. Avail the opportunity to explore the knowledge of chemical sciences with related disciplines, in particular knowledge of synthetic methods, knowledge and application of analytical techniques with specific orientation towards industries

I Semester

COURSE TITLE	COURSE LEARNING OUTCOMES
INORGANIC CHEMISTRY-I **MSC031**	***By the end of this course, students will learn the following aspects and concepts of chemistry:*** 1. Stereochemistry of compounds 2. Different types of bonding in main-group compounds 3. Metal-ligand bonding by CFT and MOT 4. Stability of metal complexes depending on the nature of metal ions and ligands 5. Kinetic application of VBT and CFT, conjugate base mechanism and substitution reaction mechanism of metal complex 6. Reaction mechanism of transition metal complexes and HSAB theory
ORGANIC CHEMISTRY-I **MSC032**	***By the end of this course, students will learn the following aspects and concepts of chemistry:*** 1. Nature of bonding in organic molecules, resonance, hyperconjugation, tautomerisation and aromaticity 2. Concept of stereochemistry in organic compound 3. Reactivity structure, stability and Conformational analysis of organic molecule and linear free energy relationship 4. Different types of organic reactions and their mechanisms
PHYSICAL CHEMISTRY-I **MSC033**	***By the end of this course, students will learn the following aspects and concepts of chemistry:*** 1. Basic origin of quantum chemistry; the solution of the Schrodinger Wave Equation for different types of models 2. Variation Theorem, Linear Variation Principle; Applications of Variation Method and Perturbation Theory to Hydrogen and Helium atom 3. Huckel Theory of Conjugated Systems 4. Angular Momentum; Eigen Functions for angular momentum, Eigen Values of angular momentum 5. Laws of thermodynamics, Free Energy, Chemical Potential, Entropy and determination of Fugacity and their Activity Coefficient 6. Fundamentals of Statistical Thermodynamics and Partition Function

COURSE TITLE	COURSE LEARNING OUTCOMES
GROUP THEORY AND SPECTROSCOPY I **MSC034**	***By the end of this course, students will learn the following aspects and concepts of chemistry:*** 1. Elements of symmetry, Point Groups, subgroups, Schoenflies symbols, representation of Point Groups, GOT theorem, derivation of character table for C2V and C3V Point Groups and their spectroscopic analysis 2. To enrich the various concepts of spectroscopy, such as Microwave Spectroscopy and their applications in the characterization of chemical compounds 3. Basic principles and selection rules in Infrared Spectroscopy and Raman Spectroscopy and their applications 4. Considerable insight into Electronic Spectroscopy, Molecular Spectroscopy and Photoelectron Spectroscopy
PRACTICAL-I INORGANIC CHEMISTRY (PRACTICAL) **MSC037**	***At the end of the lab work, a student will be able to:*** 1. Separate and determine two metal ions 2. Prepare selected inorganic complexes and their studies by I.R. electronic spectra, Mossbauer, E.S.R. and magnetic susceptibility measurements
PRACTICAL-II ORGANIC CHEMISTRY (PRACTICAL) **MSC038**	***At the end of the lab work, a student will be able to:*** 1. Separate, purify and identify compounds of the ternary mixture by chromatography 2. Organic synthesis and characterization of selected compounds
PRACTICAL-III PHYSICAL CHEMISTRY (PRACTICAL) **MSC039**	***At the end of the lab work, a student will be able to:*** 1. Adsorption to study the surface tension-concentration relationship for solutions 2. Determine the velocity constant of the reaction and the different parameters affecting the velocity constant 3. Determine the primary salt effect on the kinetics of the ionic reaction

II Semester

COURSE TITLE	COURSE LEARNING OUTCOMES
INORGANIC CHEMISTRY-II **MSC2055**	***After the completion of the course, students will be able to learn:*** 1. Effect of various ligand field strength on the transition metal ion and find out Ground State Terms with their energies, microstates, degeneracy, and selection rules for electronic spectra 2. Magnetic properties of complexes and understand spin-only and effective magnetic movements and Zeeman effect 3. Preparation, structure, bonding and reactivity of different metal pi complexes 4. Structure properties of Boranes, Carboranes, metalloboranes and Metallocarboranes compounds and Metal Clusters with metal-metal multiple bonds 5. To calculate Optical Rotatory Dispersion and Circular Dichroism spectrum
ORGANIC CHEMISTRY-II **MSC2056**	***After the completion of the course, students will be able to learn:*** 1. Various Aromatic Electrophilic substitution and Nucleophilic substitution reactions and their mechanism 2. Effects of substrate structure, leaving group and attacking species in the reactions 3. Mechanistic and stereochemical aspects of electrophiles and nucleophiles, Regio, and Chemo Selectivity 4. Basic knowledge of different free radical reactions, mechanisms, reactivity for aliphatic and aromatic substrates, and the effect of solvents on reactivity 5. Addition of various reagents to Carbon - Hetero Multiple bonds, and the study of mechanistic pathways of the elimination reaction 6. Fundamentals of Pericyclic reactions

COURSE TITLE	COURSE LEARNING OUTCOMES
PHYSICAL CHEMISTRY-II **MSC2057**	***After the completion of the course, students will be able to learn:*** 1. Rates and mechanisms of chemical reactions. It also involves the study of kinetics, thermodynamic control of reactions, and the treatment of unimolecular reactions 2. Surface tension, capillary action, Gibbs adsorption isotherm interaction, critical micellar concentration, counter ion binding to micelles, solubilization, and microemulsion 3. Types of polymers, kinetics of polymerization, mechanism of polymerization, determination of molecular mass, Number, and Mass Average Molecular Mass by different methods 4. Thermodynamics criteria for non- Equilibrium state, entropy production and entropy flow, entropy balance equation for different irreversible processes 5. Electrochemistry is relationship between electrical potential difference, as a measurable and quantitative phenomenon, and an identifiable chemical change, with the potential difference as an outcome of a particular chemical change
SPECTROSCOPY II AND DIFFRACTION METHODS **MSC2058**	***After the completion of the course, students will be able to:*** 1. Principles of NMR spectroscopy, saturation, shielding of magnetic nuclei, chemical shift and its measurements, factors, influencing chemical shift, deshielding spin-spin interactions. Factors influencing coupling constant NMR studies of nuclei other then proton-^{13}C, ^{19}F and ^{31}P, FT NMR, advantages of FT NMR 2. Find the general instrumentation and determine the geometry or shape of a molecule using X-rays. The elastic scattering phenomenon of X-rays from the atoms of material has a long-range order 3. Determine derivation, configuration, crystallographic programmes, and database 4. Identify scattering intensity vs. scattering angle and measurement technique, and identify scattering of neutrons by solids measurement techniques with the help of electron neutron diffraction

COURSE TITLE	COURSE LEARNING OUTCOMES
PRACTICAL-I INORGANIC CHEMISTRY (PRACTICAL) **MSC2060**	***At the end of the lab work, a student will be able to-*** 1. Separate cations and anions by paper chromatography/column chromatography 2. Prepare selected inorganic compounds and their spectroscopic characterisation.
PRACTICAL-II ORGANIC CHEMISTRY (PRACTICAL) **MSC2061**	***At the end of the lab work, a student will be able to-*** 1. Synthesise various organic compounds through selected reactions and characterise by spectroscopic techniques 2. Analyse qualitatively by using the acetylation method, bromated bromide solution/or-acetylation method
PRACTICAL-III PHYSICAL CHEMISTRY (PRACTICAL) **MSC2062**	***At the end of the lab work, a student will be able to-*** 1. Understand of solubility product of sparingly soluble salt and determine the strength of strong and weak acid 2. Analyse the strengths of halides in a mixture potentiometrically and acid- base titration in a non - aqueous media using a pH meter 3. Determine the dissociation constant of monobasic/dibasic acid

III Semester

COURSE TITLE	COURSE LEARNING OUTCOMES
APPLICATION OF SPECTROSCOPY INORGANIC CHEMISTRY **MSCC044301**	***After the completion of the course, students will be able to-*** 1. Understand the electronic spectra of the d^1 – d^9 system in octahedral and tetrahedral complexes and factors affecting the spectra; applications of the Orgel diagram and Tanabe–Sugano diagram 2. Use nuclear magnetic resonance and infrared spectroscopy to determine the structure of substances 3. Learn about Nuclear Magnetic Resonance of Paramagnetic Substances in Solution, 13 NMR Spectroscopy, and Electron Spin Resonance Spectroscopy 4. Become competent in using Mossbauer Spectroscopy 5. Learn the fundamentals of electronic spectroscopy and mass spectrometry
PHOTOCHEMISTRY **MSCC044302**	***After the completion of the course, students will be able to-*** 1. Know Interaction of Electromagnetic Radiation with matter, types of excitations, fate of excited molecules, quantum yield, transfer of excitation energy, actinometry 2. Learn about the determination of rate constants of reactions. Effect of light intensity on the rate of photochemical reactions 3. Learn types of photochemical reactions-photodissociation, gas-phase photolysis 4. Understand Intramolecular reactions of the olefinic bond geometrical isomerism, cyclization reactions, rearrangement, and aromatic compounds 5. Know about the intermolecular reactions of carbonyl compounds-saturated, cyclic, and acyclic 6. Know miscellaneous photochemical reactions

COURSE TITLE	COURSE LEARNING OUTCOMES
ANALYTICAL CHEMISTRY **MSCC044304**	***After the completion of the course, students will be able to-*** 1. Understand types of instrumental analysis, analytical methods, techniques, errors, and evaluation 2. Get basic knowledge of food analysis, pesticide analysis, extraction, and purification with the help of Chromatography 3. Understand the analysis of water pollution, types, techniques, pollutants, their effects, and control 4. Get basic knowledge of the analysis of soil, fuel, body fluids, and drugs 5. Get knowledge about various clinical analysis parameters and drug analysis by using Chromatography
MEDICINAL CHEMISTRY **MSCC044305**	***After the completion of the course, students will be able to learn-*** 1. Relationship between chemical structure and biological activity (SAR) and different analysis 2. Classification and mode of action, drug metabolism, xenobiotics, and the biotransformation significance of different drugs 3. Classification, antibiotics, and antitracterial activity of drugs 4. Modes of action of Antiviral, Antimalarial, Antifungal, and Antibacterial Drugs 5. Classification and mode of action of non-steroidal, anti-inflammatory, and anti-asthmatic drugs
PRACTICAL-I ***INORGANIC CHEMISTRY*** ***(PRACTICAL)*** **MSCC044306**	***At the end of the lab work, a student will be able to-*** 1. Quantitatively determine a three component combination at the conclusion of the lab session. 2. Examine Cadmium and Zinc Chromatographic Separations 3. Examine Nickel and Manganese separation using thin-layer chromatography. 4. Examine Cobalt and Zinc Chromatographic Separations 5. Recognise how to identify and separate the sugars in the provided mixture of glucose, fructose, and sucrose.

COURSE TITLE	COURSE LEARNING OUTCOMES
PRACTICAL-II ORGANIC CHEMISTRY (PRACTICAL) **MSCC044307**	***At the end of the lab work, a student will be able to-*** 1. Analyse Benzilic acid from Benzil 2. Understand the preparation of quinoline from aniline 3. Understand the preparation of 2-phenylindole from phenylhydrazone 4. Understand the biosynthesis of ethanol from sucrose. 5. Analyse the separation and identification of the sugars present in the given mixture of glucose, fructose, and sucrose by paper chromatography and determine the Rf values
PRACTICAL-III PHYSICAL CHEMISTRY (PRACTICAL) **MSCC044308**	***At the end of the lab work, a student will be able to-*** 1. Determine the stoichiometry and stability constant of the ferric isothiocyanate complex ion solution 2. Determine the rate constant of alkaline bleaching of Malachite green and the effects of ionic strength on the rate of reaction 3. Analyse the energy and enthalpy of activation in the reaction of KMnO4 and benzyl alcohol in an acid medium 4. Analyse the energy of activation and entropy of activation from a single kinetic run 5. Determine the kinetics of an enzyme-catalysed reaction

IV Semester

COURSE TITLE	COURSE LEARNING OUTCOMES
APPLICATONS OF SPECTROSCOPY ORGANIC CHEMISTRY **MSCC044401**	***After the completion of the course, students will be able to learn-*** 1. Different parameters of Ultraviolet and visible spectroscopy 2. Different parameters of Infrared Spectroscopy and its application in characterization of molecules 3. Different parameters of Nuclear Magnetic Resonance Spectroscopy 4. General properties, chemical shift and two-dimension NMR spectroscopy under Carbon 13 NMR Spectroscopy 5. Different parameters of Mass spectrometry
SOLID STATE CHEMISTRY **MSCC044402**	***After the completion of the course, students will be able to -*** 1. Study of principles, experimental procedures, and kinetics of solid state reactions 2. Learn about crystal defects and non-stoichiometry. 3. Learn about electronic properties and Band Theory 4. Study of electrically conducting solids organic charge transfer complexes, organic metals, superconductors, and types and applications 5. Study of various liquid crystals
ORGAN TRANSITION METAL CHEMISTRY **MSCC044404**	***After the completion of the course, students will be able to-*** 1. Know Alkyls, Aryls of Transition Metals and Compounds of Transition Metal-Carbon multiple bonds 2. Build a sound perception of a wide variety of Transition Metal π–Complexes 3. Understand the stoichiometric reactions and Transition Metal compounds with bonds to hydrogen, boron, and silicon 4. Learn about Homogeneous Catalysis and Fluxional Organometallic Compounds
POLYMERS **MSCC044405**	***After the completion of the course, students will be able to-*** 1. Understand the importance of polymers and basics of polymer chemistry 2. Display the professional talent for the characterization of polymers 3. Learn about the analysis and testing of polymers 4. Explore the knowledge of Inorganic Polymers 5. Learn about the structure, properties, and applications of Polymers based on Phosphorous-Phosphazenes, Polyphosphates and polymers based on Sulphur-Tetrasulphur, Tetranitride and related compounds coordination and Metal Chelate Polymers

COURSE TITLE	COURSE LEARNING OUTCOMES
PRACTICAL-I INORGANIC CHEMISTRY (PRACTICAL) **MSCC044409**	***At the end of the lab work, a student will be able to-*** 1. Understand the preparation of inorganic compounds 2. Understand the IR, Electronic Spectra of synthesised inorganic compounds 3. Discuss the handling of air and moisture sensitive compounds involving vacuum lines 4. Analyse Spectrophotometric Determination of Manganese/ Chromium in steel sample
PRACTICAL-II ORGANIC CHEMISTRY (PRACTICAL) **MSCC044410**	***At the end of the lab work, a student will be able to-*** 1. Extracte organic compounds from natural sources 2. Determine Spectroscopic Identification of organic compounds by the analysis of their spectral data (UV, IR, ^{1}HNMR, ^{13}CNMR & MS) Spectrophotometric (UV/VIS) Estimations
PRACTICAL-III PHYSICAL CHEMISTRY (PRACTICAL) **MSCC044411**	***At the end of the lab work, a student will be able to-*** 1. Determine the partial molar volume of solute and solvent in a binary mixture 2. Determine the temperature dependence of the solubility of a compound 3. Identify and estimate of metal ions such as Cd^{+2} and Pb^{+2} 4. Identify and estimate of metal ions such as Zn^{+2} and I^{+2} 5. Study metal ligand complex polarographically

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