MAHARAJA RANJIT SINGH PUNJAB TECHNICAL UNIVERSITY BATHINDA-151001 (PUNJAB), INDIA

(A State University Estb. by Govt. of Punjab vide Punjab Act No. 5 of 2015 and Approved u/s 2(f) & 12 (B) of UGC; Member AIU)

Department: **Department Of Chemistry, MRSPTU**

Program: M.Sc 2016 onwards

COs, POs, PSOs Mapping

Subject: Electronic Spectra & Magnetic Properties of Transition Metal Complexes	**Subject Code: MCHM1-101**	**Semester: 1st**
Credit: 4	**L T P 4 0 0**	**Duration: 45 Hrs.**

COs	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Interpretation of electronic and magnetic properties.	1		2					
CO2	Interpretation of molecular orbital diagrams of octahedral and tetrahedral diagramsfor various electronic properties.	1		2					
CO3	Concepts of symmetry and group theory in solving chemical structural problems.	1		2					
CO4	Use of character tables and application of group theory in spectroscopy. UNIT-I	1		1					

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Organic reaction and mechanism –I	**Subject Code: MCHM1-102**	**Semester: 1st**
Credit: 4	**L T P 4 0 0**	**Duration: 45 Hrs.**

COs	Statement	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO1	Various methods to determine the mechanisms of the reactions and different reaction intermediate involved	2			3			2	
CO2	Mechanistic aspects in nucleophilic and electrophilic substitution.	1			3			2	
CO3	Reaction mechanism and various factors affecting rate of free radical reactions	1			3			2	
CO4	Reaction conditions, products formation and mechanisms of some named reactions	1			3			2	

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Thermodynamics	**Subject Code: MCHM1-103**	**Semester: 1st**
Credit: 4	**L T P 4 0 0**	**Duration: 45 Hrs.**

COs	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Acquire knowledge of classical thermodynamics and understanding thermodynamic phenomenon in a chemical system	2		1					
CO2	Acquire knowledge of statistical thermodynamics and understanding thermodynamic properties in terms of partition functions	2							
CO3	Acquire knowledge of Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac statistics	2							
CO4	Acquire knowledge of theories of specific heat for solids	2		1					

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Computational Skills & Simulations in Chemistry	**Subject Code: MCHM1-156**	**Semester: 1st**
Credit: 4	**L T P 4 0 0**	**Duration: 47 Hrs.**

COs	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Advantages and principle of computer based calculation methods in chemistry	1						2	
CO2	Fundamentals of various calculation methods viz: molecular mechanics, semi-empirical method and density-functional theory	1						2	
CO3	Running calculation and model building using different algorithms in software packages, like Hyperchem, Gaussian	1						2	
CO4	Quantum mechanical calculations in gaseous phase with GAMESS and Liquid simulations in BOSS	1						2	

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Polymer Chemistry	**Subject Code: MCHM1-157**	**Semester: 1st**
Credit: 4	**L T P 4 0 0**	**Duration: 45 Hrs.**

COs	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	1. To impart knowledge about polymers and polymerization mechanism.						2		
CO2	2. To understand the difference between crystalline and amorphous polymers.								3
CO3	3. To familiarize polymer characterization with various spectroscopic techniques.		3						
CO4	4. To learn molecular weight measurement by osmometry, mass spectrometry and Viscometry.				3				

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Group Theory	**Subject Code: MCHM1-158**	**Semester: 1st**
Credit: 4	**L T P 4 0 0**	**Duration: 45 Hrs.**

COs	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Symmetry elements and point groups.	1		2		1			
CO2	Use of character table in spectroscopy	1		2		1			
CO3	Electronic structure and energy levels.	1		2		2			

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Inorganic Chemistry Lab.-I	Subject Code: MCHM1-104	Semester: 1st
Credit: 2	L T P 0 0 4	Duration:

COs	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	To develop basic understanding of various lab practices including safety measures.	1	2					3	
CO2	To synthesize inorganic complexes and their characterization.	1	2					3	

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Organic Chemistry Lab-I	**Subject Code: MCHM1-105**	**Semester: 1st**
Credit: 2	**L T P 0 0 4**	**Duration:**

COs	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	The students will acquire knowledge of Distillation and separation	1		2					
CO2	The students will acquire knowledge of Different chromatographic techniques	1		2					
CO3	The students will acquire knowledge of Syntheses of various organic compounds and their structural analysis	2		1				2	

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Spectroscopy I	**Subject Code: MCHM1-206**	**Semester: 2nd**
Credit: 4	**L T P 4 0 0**	**Duration: 45 Hrs.**

Cos	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	1. Selection rules, line width and broadening.	3		1		2			1
CO2	2. Various spectroscopic techniques.	3	1	2		3			1
CO3	3. Importance of spectroscopy for structural elucidation.	3	1	3		3			1

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: ORGANOMETALLICS	Subject Code: MCHMS1-202	Semester: 2nd
Credit: 4	L T P 4 0 0	Duration: 45 Hrs.

COs	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Organometallic compounds and their nomenclature.	1							
CO2	Bonding and reactivity of metal complexes	1							
CO3	Role of organometallic complexes in organic syntheses.	1	2						
CO4	Importance of catalyst in syntheses.	1	2		2	2		2	

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Organic reaction and mechanisms –II	**Subject Code: MCHM1-208**	**Semester: 2nd**
Credit: 4	**L T P 4 0 0**	**Duration: 45 Hrs.**

COs	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Chemistry behind elimination, oxidation, reduction and Carbon-Carbon bond formation	2			3			1	
CO2	Chemistry behind rearrangement reactions	2			3			1	
CO3	Use of diverse reagents in organic synthesis	2			3			1	
CO4	Concepts behind natural product synthesis	2			2			1	

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Seminar I & Seminar II	Subject Code: MCHM1-209 & MCHM1-314	Semester: 2nd
Credit: 1	L T P 0 0 2	Duration:

COs	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	1. Be able to prepare power point presentation.				3		3		
CO2	2. Be able to show and improve their presentation skills in the presence of audience.	1			3	1	3		
CO3	3. Feel Confident and will be able to remove stage fear			1	1		3		

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: NANOCHEMISTRY	**Subject Code: MCHM1-259**	**Semester: 2nd**
Credit: 4	**L T P 4 0 0**	**Duration: 45 Hrs.**

COs	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Introduction to the concept of nanochemistry and its classification and terminology.	1				3		3	
CO2	Synthesis of nanomaterials by different routes and their characterization.Applications in biological and electronic systems.	1				2		3	
CO3	Applications in biological and electronic systems	1							

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Bio – Organic Chemistry	**Subject Code: MCHM1-260**	**Semester: 2nd**
Credit: 4	**L T P 4 0 0**	**Duration: 45 Hrs.**

COs	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	The students will acquire knowledge of Relationship between organic chemistry and biochemistry.	1			1				
CO2	The students will acquire knowledge of Kinetics and mechanism of enzyme catalysis.	2			2				
CO3	The students will acquire knowledge of Determination of enantio- and diastereoselectivity using various analytical methods	2			2		1		

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Analytical Chemistry	**Subject Code: MCHM1-261**	**Semester: 2nd**
Credit: 4	**L T P 4 0 0**	**Duration: 45 Hrs.**

Cos	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Acquire knowledge of basic concepts and importance of analytical chemistry	2		1		1			
CO2	Acquire knowledge of significance of significant figures and data analysis	2		1					
CO3	Acquire knowledge of thermogravimetric, electroanalytical, chromatographic methods of analysis	2		1		1			
CO4	Acquire knowledge of electron microscopic techniques and their application	2				1			

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Bioinorganic chemistry	**Subject Code: MCHM1-262**	**Semester: 2nd**
Credit: 4	**L T P 4 0 0**	**Duration: 45 Hrs.**

Cos	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	1. Structures, properties and transport mechanisms of enzymes in physiological systems			2					
CO2	2. Metal complexation with various nucleic acids and their role in transcription of nucleic acids.				3				
CO3	3. To understand structures, processes and chemical interactions of enzymes with metal ions in biological systems								3

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Bio-physical Chemistry	**Subject Code: MCHM1-263**	**Semester: 2nd**
Credit: 4	**L T P 4 0 0**	**Duration: 45 Hrs.**

Cos	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Acquire knowledge of basic concepts and mechanism of enzyme catalyzed reactions	2						1	
CO2	Acquire knowledge of interactions between various biomolecules	2						1	
CO3	Acquire knowledge of thermodynamics of ADP and ATP syntheses	2							

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Asymmetric Synthesis	**Subject Code: MCHM1-264**	**Semester: 2nd**
Credit: 4	**L T P 4 0 0**	**Duration: 45 Hrs.**

Cos	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	The students will acquire knowledge of Methods for inducing enantio- and diastereoselectivity	1			3				
CO2	The students will acquire knowledge of Determination of enantio- and diastereoselectivity using various analytical methods	2			2		2		
CO3	The students will acquire knowledge of Chemistry behind a range of asymmetric reactions	2			2				

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Inorganic Chemistry Lab II	**Subject Code: MCHM1-210**	**Semester: 2nd**
Credit: 2	**L T P 0 0 4**	**Duration:**

Cos	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	To extend knowledge of use of standard laboratory equipment, modern instrumentation and classical techniques to carry out experiments.	1	3						
CO2	To synthesize various inorganic complexes and their qualitative determination by UV, IR, NMR and ESR techniques.			2		2		3	1

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Spectroscopy II	Subject Code: MCHM1-311	Semester: 3rd
Credit: 4	L T P 4 0 0	Duration: 45 Hrs.

Cos	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	1. Principle of NMR, spin-spin splitting and fluxionality in molecules.	3							1
CO2	2. Advanced NMR techniques like DEPT, INEPT.	1		3		1			1
CO3	3. Structural elucidation of molecules with UV, IR, NMR and mass spectroscopy.		3	3		1			1

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Quantum Chemistry	Subject Code: MCHM1-312	Semester: 3rd
Credit: 4	L T P 4 0 0	Duration: 45 Hrs.

Cos	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Schrodinger equation for a particle in a box and quantum chemical description.	2					2		
CO2	Electronic and Hamiltonian operators for molecules	2					2		
CO3	Quantum chemical description of angular momentum and term symbols for a one and manyelectron systems	2					2		
CO4	Born-Oppenheimer approximation, the Pauli principle, Hund's rules, Hückel theory and the variation principle	2					2		

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Heterocyclic chemistry	**Subject Code: MCHM1-313**	**Semester: 3rd**
Credit: 4	**L T P 4 0 0**	**Duration: 45 Hrs.**

Cos	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	1. Be familiar with the structures of important classes of heterocyclic aromatic organic compounds,			3					
CO2	2. Be able to classify simple heterocyclic aromatic compounds as electron deficient or electron rich and explain their reactivity based on these properties,				3				
CO3	3. Be able to explain on a mechanistic level, reactions and synthesis of important electron deficient nitrogen containing heterocycles; pyridines, diazines and their benzo-condensed analogs,					2			
CO4	4. Be able to explain on a mechanistic level, reactions and synthesis of important electron rich heterocycles; furans, pyrroles and thiophenes and 1,3-azoles, and benzo-condensed analogs.								2

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Environmental Chemistry	**Subject Code: MCHM1-365**	**Semester: 3rd**
Credit: 4	**L T P 4 0 0**	**Duration: 45 Hrs.**

Cos	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Pollution and its effects on system and applications of green technologies.			2		1			
CO2	Toxicity of heavy metals and their remediaions			2		2			
CO3	Harmful effects of pesticides on soil and their removal from system.			2				3	

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Medicinal Chemistry	**Subject Code: MCHM1-366**	**Semester: 3rd**
Credit: 4	**L T P 4 0 0**	**Duration: 45 Hrs.**

Cos	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Different antimicrobial agents	1			2	1			
CO2	Synthetic procedures for antimalarial drugs	1			2	1			
CO3	Importance of CNS-stimulants and psychoactive drugs and diuretics.	1			2	1			

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Green Chemistry	**Subject Code: MCHM1-367**	**Semester: 3rd**
Credit: 4	**L T P 4 0 0**	**Duration: 45 Hrs.**

Cos	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	The students will acquire knowledge of Importance of ionic liquids in green syntheses.	1			2				
CO2	The students will acquire knowledge of Advantages of phase transfer catalyst and crown ethers in green reactions.	2			2	1			
CO3	The students will acquire knowledge of Generation and application of superoxide anions.	1			2	2			

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Organic Chemistry Lab.-II	**Subject Code: MCHM1-315**	**Semester: 3rd**
Credit: 2	**L T P 0 0 4**	**Duration: 60 Hrs.**

Cos	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Syntheses of various organic compounds.	1		2				3	
CO2	Purification and isolation of compounds.	1		2				3	

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Physical Chemistry Lab – I	Subject Code: MCHM1-316	Semester: 3rd
Credit: 2	L T P 0 0 4	Duration:

Cos	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Acquire knowledge of surface adsorption phenomena while performing experiments		2	1			2		
CO2	Acquire knowledge of various physical parameters		2	1			2		
CO3	Acquire knowledge of Conductivity related phenomena		2	1			2		

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Photochemistry	**Subject Code: MCHM1-417**	**Semester: 4th**
Credit: 4	**L T P 4 0 0**	**Duration: 45 Hrs.**

Cos	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	1. Acquire basic knowledge on theoretical and applied photochemistry,			1					
CO2	2. Overview basic photochemical reactions, photochemical reactions in imaging systems,				3				
CO3	3. Handle silver halide photography, photodegradation and photostabilization of materials,							3	
CO4	4. To study some important applications of photochemistry.								

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Natural Products	**Subject Code: MCHM1-418**	**Semester: 4th**
Credit: 4	**L T P 4 0 0**	**Duration: 45 Hrs.**

Cos	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Isolation, purification, identification and standardization of natural products	1		1	2			2	
CO2	Structure elucidation of alkaloids, sterols and terpenoids,	1		1	2				
CO3	Importance of vitamins, xanthophyll and carotenes	1			2				

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Physical Chemistry Lab.-II	**Subject Code: MCHM1-419**	**Semester: 4th**
Credit: 2	**L T P 0 0 4**	**Duration:**

Cos	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Acquire knowledge of colligative properties and phase rule while performing experiments		2	1			2		
CO2	Acquire knowledge of various physical parameters		2	1			2		

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Term Paper	**Subject Code: MCHM1-420**	**Semester: 4th**
Credit: 4	**L T P 0 0 4**	**Duration:**

Cos	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	1. Know about the various components of a research article.								
CO2	2. Will learn how to do the literature survey for a pre-defined topic.		1	1	1	1	1	1	
CO3	3. Be able to write a review paper.			1	3	1	3		1

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Advanced Lab.-I	**Subject Code: MCHM1-421**	**Semester: 4th**
Credit: 3	**L T P 0 0 4**	**Duration:**

Cos	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Preparation and purification of different inorganic complexes		2				3		
CO2	Application of UV-Vis, FT-IR, Magnetic moment measurement, Conductivity measurements, NMR and Thermogravimetric analysis for characterization of coordination complexes		2				3		

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%

COs, POs, PSOs Mapping

Subject: Advanced Lab II	**Subject Code: MCHM1-422**	**Semester: 4th**
Credit: 3	**L T P 0 0 4**	**Duration:**

Cos	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	The students will acquire knowledge of Structure elucidation of unknown compounds via interpretation of the spectra (NMR, IR, UV & MS).	1			2		2		
CO2	The students will acquire knowledge of Various reactions conditions including modern coupling strategies and their implications	1			2			3	

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%