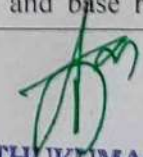


**PERCENTAGE OF REVISION OF M.SC CHEMISTRY SYLLABUS UNDER REGULATION
2023-25**

PG CHEMISTRY							
S. No	Course Code	Course Title	Change Details	% of Changes	Content Deleted	Content Updated	Reason for Change
	23PCY 101	Inorganic Chemistry –I- Solid state and Nuclear Chemistry	Unit I	100%	Solid State Chemistry –I The growth and form of crystals - the crystal systems and Bravais lattices - Miller indices and labelling of planes - symmetry properties - crystallographic point groups and space groups - fundamentals of X-ray diffraction - powder and rotating crystal methods - systematic absences and determination of lattice types - analysis of X-ray data for cubic system - structure factor and Fourier synthesis - electron and neutron diffraction and structure determination.	Chains – Catenation, heterocatenation, isopolyanions, heteropolyanions (explanation with examples). Cages –Structure and bonding of phosphorus compounds, boranes, carboranes and metallocene carboranes. Metal clusters - Structure and bonding of dinuclear, trinuclear, tetra nuclear and hexa nuclear clusters - polyatomic zintl anions and cations - chevre phases - fullerenes and their applications. Rings - Structure and bonding of borazines - phosphonitrilic compounds- sulphur - nitrogen ring compounds (S ₄ N ₄).	Subject Expert
	23PCY 102	Organic Chemistry – I- Organic Reaction Mechanisms	Unit-I	1%	fulvene and sydnone.	Nil	Course Teacher
	23PCY 204	Inorganic Chemistry –II- Coordination Chemistry	Unit-IV	20%	Structure of coordination compounds with reference to the existence of various coordination numbers - complexes with coordination number two -	Inert and Labile complexes; Associative, Dissociative and SNCB mechanistic pathways for substitution reactions; acid and base hydrolysis	Subject Expert and Industrial Expert




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Unit
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20%

complexes with coordination number three
- complexes with coordination number four
- tetrahedral and square planar complexes
- complexes with coordination number five
- regular trigonal bipyramidal and square pyramidal
- site preference in trigonal bipyramidal complexes
- site preference in square planar complexes
- isomerism in five coordinate complexes
- coordination number six
- distortion from perfect octahedral symmetry
- trigonal prism
- geometrical isomerism in octahedral complexes
- coordination number seven and eight.

Inorganic chains - rings
- cages and clusters
- catenation
- heterocatenation
- intercalation chemistry
- isopolyanions
- heteropolyanions
- borazines - phosphazenes
- phosphazene polymers
- ring compounds of sulphur and nitrogen
- homocyclic inorganic systems
- cages - boron cage compounds
- metal clusters
- dinuclear clusters
- trinuclear clusters
- tetranuclear clusters
- hexanuclear clusters
- structural prediction of

of octahedral complexes; Classification of metal ions based on the rate of water replacement reaction and their correlation to Crystal Field Activation Energy; Substitution reactions in square planar complexes: Trans effect, theories of trans effect and applications of trans effect in synthesis of square planar compounds; Kurnakov test.

Electron Transfer reactions in octahedral complexes: Outer sphere electron transfer reactions and Marcus-Hush theory; inner sphere electron transfer reactions; nature of the bridging ligand in inner sphere electron transfer reactions. Photo-redox, photo-substitution and photo-isomerisation reactions in complexes and their applications



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					organometallic clusters.		
23PCY 205	Organic Chemistry-II – Organic Reactions and Stereochemistry	Unit I	5%	Allylic oxidation - oxidation of alcohols, glycols, halides.	--		Course teacher and subject expert
		Unit III	5%	Simple problems in pericyclic reaction.	--		
23PCY 2E2	Electrochemistry	All units	100%	New course	New course		Academic Expert
23PCY 209	Physical Chemistry Practical –I	--	40%	PH, PKa for Phosphoric acid Titration of Potassium Iodide against Potassium Permanganate Colorimetric Estimations (using photoelectric colorimeter) –(Not for ESE) Estimation of Copper, Iron, Nickel, Manganese and Chromium	1. Determination of Critical Solution Temperature- Phenol – Water system. 2. Determination of effect of added electrolyte on CST of Phenol- Water system 3. Determination of the concentration of the electrolyte using CST of Phenol- Water system 4. Titration of Ferrous Ammonium Sulphate against Potassium Permanganate		Academic Expert
23PCY 310	Organic Chemistry –III – Natural Products and Organic Reagents	Unit I	5%	Biosynthesis of mono and di terpenoids.	--		Course teacher and subject expert
		Unit II	5%	Estrogen.			
		Unit V	5%	Structural elucidation of caffeine,Uracil, Cytosine and thymine.			
23PCY 311	Physical Chemistry –III - Classical and Statistical Thermodynamics	Unit V	100%	Quantum Statistics Bose Einstein distribution law- derivation – entropy of boson applications. Derivation of Planck's	Irreversible Thermodynamics Theories of conservation of mass and energy entropy production in		Course teacher and subject expert



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				capacity – Einstein theory and Debye theory - Debye T- cube law - Helium at low temperature Fermi – Dirac distribution law- derivation - entropy of fermions - applications - electron gas - Fermi energy of free electrons at absolute zero - Heat capacity of free electrons in metals - comparison of Maxwell Boltzmann, Bose Einstein, Fermi - Dirac statistics.	flux concepts. Onsager theory-validity and verification- Onsager reciprocal relationships. Electro kinetic and thermo mechanical effects- Application of irreversible thermodynamics to biological systems.	
23PCY 3E5	Major Elective –II Material Science	All units	100%	New course	New course	Academic Expert
23PCY 415	Inorganic Chemistry Practical –II	--	10%	Chromatography (Demonstration only) Column, Paper & Thin layer: Separation of Components in ink & flowers.	Colorimetric Estimations (using photoelectric colorimeter) –(Not for ESE) Estimation of Copper, Iron, Nickel, Manganese and Chromium	Course teacher and subject expert
23PCY 416	Organic Chemistry Practical –II	--	5%	Citric acid or ascorbic acid from a tablet or from a natural source. Chromatography: Column, Paper and thin layer.		Academic Expert
23PCY 417	Physical Chemistry Practical –II	--	10%	Determination of hydrolysis constant of aniline hydrochloride Determination of metal to ligand ratio of complexes by Job's method using UV- visible Spectrophotometer	--	Subject expert
23PCY 4VA	Value Added Course – II Biofuels and Energy Storage Devices	All units	100%	New course	New course	Industrial Expert

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