PERCENTAGE OF REVISION OF M.SC CHEMISTRY SYLLABUSUNDER 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 - chevrel phases - fullerenes and their applications. Rings - Structure and bonding of borazines - phosphonitrilic compounds- sulphur - nitrogen ring compounds (S4N4).	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

NALLAMUTHU GOUNDER MAHALINGAM COLLEGE POLLACHI

Dr. R. MUTHUKUMARAN, M.A.,M.Phil.,B.Ed.,Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

					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 symmerty - trigonal prism - geometrical isomerism in octahedral complexes -	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.	
			Unit V	20%	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	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	

					organometallic clusters.		
	23PCY 205	Organic Chemistry-II – Organic Reactions and Stereochemistry	**Unit I** **Unit III**	5% 5%	Allylic oxidation - oxidation of alcohols, glycols, halides. Simple problems in pericyclic reaction.	-- --	Course teacher and subject expert
	23PCY 2E2	Electrochemistry	**All units**	100%	New course	New course	Academic Expert
	23PCY 209	Physical Chemistry Practical –I	--	40%	PH, PKa for Phosporic 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** **Unit II** **Unit V**	5% 5% 5%	Biosynthesis of mono and di terpenoids. Estrogen. Structural elucidation of caffeine,Uracil, Cytosine and thymine.	--	Course teacher and subject expert
	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

NALLAMUTHU GOUNDER POLLACHI COLLEGE

Dr. R. MUTHUKUMARAN,
M.A.,M.Phil.,B.Ed.,Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

				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

HoD

Dr.K.POONKODI
HEAD
PG DEPARTMENT OF CHEMI
NGM COLLEGE, POLLACHI

NALLAMUTHU GOUNDER MAHALINGAM COLLEGE POLLACHI

PRINCIPAL
Dr. R. MUTHUKUMARAN, M.A.,M.Phil.,B.Ed.,Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District