DepartmentofChemistry

CourseOutcomes,ProgramOutcomesandProgramSpecificOutcomes

M.Sc.(Chemistry)1st Sem.

Subject:InorganicChemistry **SubjectCode:**22CHE-101

CourseOutcomes(CO)

Aftersuccessfulcompletion ofthe course,the studentis expectedto:
CO1: Learn aboutdifferentconceptsofGroupTheory
CO2: Learn the fundamentals and applications of Stereochemistry and Bonding in Main GroupCompounds
CO3: Learn abouttheMetal LigandEquilibriainsolution andMetal-LigandBonding
CO4: Understand the Reaction Mechanism of Transition Metal Complexes-
I**CO5:** Understand the concepts of reactions without metal ligand bondcleavage,racemizationof tris chelatecomplexes.

M.Sc.(Chemistry)1st Sem.

Subject:PhysicalChemistry **SubjectCode:**22CHE-102

CourseOutcomes(CO)

Aftersuccessfulcompletion ofthe course,the studentis expectedto:
CO1: Learn aboutdifferentconceptsofquantummechanicslikeoperators' particlesinboxetc.**CO2:** Learn the fundamentals and applications of thermodynamics and its utility in reactionmechanism.
CO3: Learn aboutthekineticsofdifferentorderreaction.
CO4: Understandthemechanism ofchainreaction.
CO5: Understandtheconceptsofadvancedelectrochemistryandtheiruses.

M.Sc.(Chemistry)1st Sem.

Subject:OrganicChemistry **SubjectCode:**22CHE-103

CourseOutcomes(CO)

Aftersuccessfulcompletion ofthe course,the studentis expectedto:

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CO1: Learn aboutdifferentconceptsofnatureof bondinginorganicmolecules**CO2:**Learnthefundamentalsandapplicationsofstruct ureandreactivity**CO3:** Learn about thealiphaticnucleophilicandelectrophilic substitution
CO4: Understand the molecular symmetry and chirality. D-L, R-S, E-Z and threo-erythronomenclature
CO5: Understandtheconceptsof auxiliary,substrate,reagent andcatalystcontrolled

M.Sc.(Chemistry)1st Sem.

Subject:Spectroscopy-I **SubjectCode:**22CHE-104

CourseOutcomes(CO)

Aftersuccessfulcompletion ofthe course,the studentis expectedto:
CO1: Learn aboutIntroductionandunderstandingofUV-Visiblephenomenon
CO2: Learn the fundamentals and applications of Infrared Spectroscopy**CO3:**LearnabouttheNuclearMagneticResonanceSpectrosc opy**CO4:**Understand theMass Spectrometry
CO5: Understand theconceptsofCarbon-13 NMRSpectroscopyandHeteronuclearCoupling

ProgramOutcomes(PO)

Aftersuccessfulcompletion oftwoyear degreeprogram inchemistrystudents shouldbe ableto;
PO1: Understand the three laws of thermodynamics.**PO2:** Learn the phase equilibrium and phase diagrams.**PO3**: Learn the enzymatic reaction and their mechanism.**PO4:**Abletounderstandbasictermsincomputer science
PO5: Abletosolve statisticalproblemslikemean,medianandmode
PO6:Learndifferenttypeofrearrangementreactionandmechanism

ProgramSpecific Outcomes (PSO)

Aftercompletionofthesecoursesstudents willableto:
PSO1: Able to understand different type of theories which help them in competitive exam.**PSO2**: Basic reaction mechanism will help students to carry out experiments in various researchfields.
PSO3: Statistical analysis will help out in research are and data analysis.**PSO4:** Students will also learn basic concepts of computer and IT skills.**PSO5:** Inorganicspecializationwillhelpstudentstoselecttheirfutureoption.
PSO6: Studentswill becapableof presentationonthetopicassigned;use ofboardorpowerpointpresentation.

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DepartmentofChemistry

CourseOutcomes,ProgramOutcomesandProgramSpecificOutcomes

M.Sc.(Chemistry)2nd Sem.

Subject:InorganicChemistry-II **SubjectCode:**22CHE-201

CourseOutcomes(CO)

Aftersuccessfulcompletion ofthe course,the studentis expectedto:

CO1: Learn about different concepts of Reaction Mechanism of Transition Metal Complexes-II**CO2:** Learn the fundamentals and applications of Magnetic Properties of transition metalcomplexes

CO3: Learn about the Electronic Spectra and Magnetic Properties of Transition MetalComplexes

CO4: UnderstandtheMetalπ-Complexes

CO5: Understandtheconcepts of MetalClusters

M.Sc.(Chemistry)2nd Sem.

Subject:PhysicalChemistry-II **SubjectCode:**22CHE-202

CourseOutcomes(CO)

Aftersuccessfulcompletion ofthe course,the studentis expectedto:

CO1: LearnaboutdifferentconceptsofThirdlaw ofthermodynamics,Nernstheattheorem,conceptofabsolute entropy

CO2: LearnthefundamentalsandapplicationsofChemicalDynamics

CO3: LearnabouttheStatisticalMechanics

CO4: Understand theLaws ofphotochemistry

CO5: UnderstandtheconceptsofSternVolmer equation

M.Sc.(Chemistry)2nd Sem.

Subject:OrganicChemistry **SubjectCode:**22CHE-203

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CourseOutcomes(CO)

Aftersuccessfulcompletion ofthe course,the studentis expectedto:
CO1: Learn about different concepts of Aromatic Electrophilic SubstitutionCO2: Learn the fundamentals and applications of Elimination ReactionsCO3: Learnaboutthe Additionto Carbon-CarbonMultiple Bonds
CO4: UnderstandtheAdditiontoCarbon-HeteroMultipleBonds
CO5: Classificationandgeneralmechanistictreatmentofnucleophilic

M.Sc.(Chemistry)2nd Sem.

Subject:StatisticsforChemists **SubjectCode:** 22CHE-204

CourseOutcomes(CO)

Aftersuccessfulcompletion ofthe course,the studentis expectedto:
CO1: Learn aboutdifferentconceptsof MeasuresofCentralTendency
CO2: LearnthefundamentalsofRandomvariables,DiscreteProbabilitydistributionsCO3: Learn about the Simple and Composite Hypotheses, Null and Alternative HypothesesCO4:Understand the Karl Pearsonand SpearmanRank Correlation
CO5: Understandtheconceptsof RegressionAnalysis

ProgramOutcomes(PO)

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PO1: Understand the three laws of thermodynamics.**PO2:** Learn the phase equilibrium and phase diagrams.**PO3**: Learn the enzymatic reaction and their mechanism.**PO4:**Abletounderstandbasictermsincomputer science
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CourseOutcomes,ProgramOutcomesandProgramSpecificOutcomes

M.Sc.(Chemistry)3rdSem.

Subject:Spectroscopy-II **SubjectCode:**22CHE-301

CourseOutcomes(CO)

Aftersuccessfulcompletion ofthe course,the studentis expectedto:

CO1: Learn aboutrotationalandvibrationalspectrafordifferentmolecules.

CO2: Learn abouttheVibrational-Rotationalspectraandtheconceptofharmonicity.

CO3: Learn abouttheramanandelectronicspectraofdifferentmolecules.

CO4: Understandtheelectronspin resonancespectroscopyandMossbaurspectroscopy.

CO5: Understand theconceptof Atomic absorptionspectroscopy, flamephotometryandColorimetery.

M.Sc.(Chemistry)3rdSem.

Subject:OrganotransitionMetalChemistry **SubjectCode:** 19CHE-302

CourseOutcomes(CO)

Aftersuccessfulcompletion ofthe course,the studentis expectedto:

CO1: Understand

andClassifytheOrganometallicCompounds**CO2:**LearnabouttheAlk

yls andarylsof TransitionMetals.

CO3: Learnaboutthetransition metalpiComplexes.

CO4: Learn about the Compounds of Transition Metal-Carbon Multiple Bonds.

CO5: Learn about theHomogenous Catalysis.

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M.Sc.(Chemistry)3rdSem.

Subject:InstrumentalTechniques-I **SubjectCode:**22CHE-305

CourseOutcomes(CO)

Aftersuccessful completion ofthecourse,thestudent isexpectedto:
CO1: LearnaboutthedifferentmethodofanalysislikeElectroanalyticalMethods.**CO2:**Lear

n aboutthedifferent typesoftitrationand titration curve.

CO3: Learnaboutthepolarography,voltammeter.

CO4: Understand the principles of Chromatography and its uses.**CO5:**Learn aboutthedifferentThermal Techniques.

M.Sc.(Chemistry)3rdSem.

Subject:ModernConceptsofInorganicChemistry **SubjectCode:**22CHE-308

CourseOutcomes(CO)

Aftersuccessfulcompletion ofthe course,the studentis expectedto:
CO1: Learn about the different inorganic polymers and non aqueous

solvents.**CO2:**Learnabout theisopoly andheteropoly Acids and salts..

CO3: Learnaboutthebasicsof photochemistry.

CO4: Understandaboutthesewagetreatment

andfertilizers.**CO5:**Learnabouttheradioactivityand

nuclearchemistry.

ProgramOutcomes(PO)

Aftersuccessfulcompletion oftwoyear degreeprogram inchemistrystudents shouldbe ableto;
PO1: Understandthe threelaws ofthermodynamics.
PO2: Learnthephase equilibriumandphasediagrams.

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PO3:Learntheenzymaticreactionandtheirmechanism.
PO4: Abletounderstand basictermsincomputer science
PO5: Abletosolve statisticalproblemslikemean,medianandmode
PO6:Learndifferenttypeofrearrangementreactionandmechanism

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CourseOutcomes,ProgrammeOutcomesandProgrammeSpecific Outcomes

M.Sc.(Chemistry)4th Sem.

Subject:InorganicChemistrySpecial-IV (BioinorganicandMedicinalChemistry) **SubjectCode: 22CHE-401**

CourseOutcomes (CO)

Aftersuccessfulcompletion ofthe course,the studentis expectedto:
CO1: UnderstandBioinorganic chemistryof Na^{+},K^{-}, Mg^{2+} and Ca^{2+}.

CO2: Abletounderstand ElectronTransferinBiologicalSystems.

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CO3: Abletoknowabout Fixation ofdinitrogenbiologicallyandabiologically.

CO4: AbletounderstandBiochemicalbasisofessentialmetaldeficientdiseaseslikeIron,copper and zinc deficiencies.

CO5: KnowaboutdifferentclassesofInorganicdrugslikeInorganicdrugs indentalcarries,Inorganic compounds asantacids.

CO6: Learn aboutAnticancer activityandmechanism ofplatinumcomplexes.

CO7: AbletounderstandAntibacterialandantiviralpropertiesofmetalcomplexes.

M.Sc.(Chemistry)4th Sem.

Subject:InorganicChemistrySpecial-V (InstrumentalTechniques–II) **SubjectCode:22CHE-404**

CourseOutcomes (CO)

Aftersuccessfulcompletion ofthe course,the studentis expectedto:

CO1: Abletounderstanduse ofsymmetryto determinethe numberofactiveinfraredandRaman lines.

CO2: Learnabout Application ofresonanceRaman Spectroscopyparticularlyforthe studyofactivesites of metalloproteins as myoglobinand haemoglobin.

CO3: Learnstructural elucidationofinorganiccompoundsusingNQRspectroscopy.

CO4: Ableto understandMagneticResonanceImagingbyapplications ofNMR (^{19}F,^{31}P).

M.Sc.(Chemistry)4th Sem.

Subject:InorganicChemistrySpecial-VI (AdvanceTopicsinInorganicChemistry)C **SubjectCode:22CHE-407**

ourseOutcomes(CO)

Aftersuccessfulcompletion ofthe course,the studentis expectedto:

CO1: Developnew pharmaceuticaltherapies byunderstandingtheinteractions ata drugbindingsite.

CO2: Knowabout Molecularreceptorsfordifferenttypesof molecules.

CO3: Abletodesignandsynthesisofco-receptor molecules.

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CO4: Knowaboutpropertiesofnanostructuredmaterials(opticals,magnetic,chemical andphotocatalyticproperties).

CO5: Able to know techniques for Nano materials synthesis (Hydrothermal, Solvotherm-al,solgel,Physical Vapourdeposition (PVD) etc.

CO6: Abletounderstandcharacterizationofnanomaterialsby X-raydiffraction(XRD),Sc

-anningElectronMicroscope(SEM),TransmissionElectronMicroscope(TEM)etc.

CO7: Abletoapplynanoscienceandnanotechnologyin variousfields.

CO8: UnderstandDefectsandNon-stoichiometryinSolidState.

CO9: Learn aboutMetals,insulatorsandsemiconductorsandtheirOpticalandMagneticproperties.

M.Sc.(Chemistry)4th Sem.

Subject:CommunicationSkills **SubjectCode:22CHE-410**

CourseOutcomes(CO)

Aftersuccessfulcompletion ofthe course,the studentis expectedto:

CO1: Toenablethestudentstocommunicateeffectivelyandconductthemselvesgraciouslyinthebusiness of life.

CO2: Preparingfor interviews,CV/ Biodata,Group Discussion.

CO3: Enableart ofSmall Talk,ParticipatinginConversations.

CO4: RecognizingandManagingEmotionsandsituationslikeStressandAngerManagement

CO5: Understand Personality Development Skills like Personal Grooming,Assertiveness,ImprovingSelf-Esteem.

CO6: LearnaboutsignificanceofCriticalThinking.

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