Khatra Adibasi Mahavidyalaya
Department of Chemistry_Syllabus Module

Session 2019-2020

Faculty Name	1st Semester	3rd Semester	5th Semester
Dr. Swarup Kumar Maji	**Core C1A - T1 Inorganic Chemistry** Atomic Structure Chemical Periodicity Acids and bases Redox reactions **Core C1A - P1 Inorganic Chemistry Lab**	**Core C6 - T6 - Inorganic Chemistry II** Chemical Bonding-I Chemical Bonding-II Radioactivity **Core C6 - P6 - Inorganic Chemistry II Lab** Iodo / Iodimetric Titrations Estimation of metal content in some selective samples	**Core C11 - T11 - Inorganic Chemistry IV** Coordination Chemistry-II **Core C11 - P11 - Inorganic Chemistry IV Lab** Gravimetry
Sri Bivas Dey	**Core C2 - T2 - Physical Chemistry I** Kinetic Theory and Gaseous state Chemical Thermodynamics Chemical kinetics **Core C2 - P2 - Physical Chemistry I Lab**	**Core C5 - T5 - Physical Chemistry II** Transport processes Applications of Thermodynamics – I Foundation of Quantum Mechanics **Core C1C – T3 Physical Chemistry** Chemical Energetics Chemical Equilibrium Conductance **Core C5 - P5 - Physical Chemistry II Lab** **Core C1C – P3 Physical Chemistry Lab** Thermochemistry Conductance	**DSE1 - T1 – Advanced Physical Chemistry** Crystal Structure Statistical Thermodynamics Special selected topics **SEC3 - T3 - IT Skills for Chemists** Mathematics Computer programming Hands On Practical **DSE1 - P1 – Advanced Physical Chemistry Lab** Computer Programming based on numerical methods
Sri Soumen Rakshit		**SEC T1 – Basic Analytical Chemistry** Introduction Analysis of soil Analysis of water Analysis of food products Chromatography Ion-exchange Analysis of cosmetics Suggested Applications Suggested Instrumental demonstrations	**Core C11 - T11 - Inorganic Chemistry IV** Chemistry of d- and f- block elementsTransition Elements Lanthanoids and Actinoids **DSE2 - T2 - Green Chemistry** Introduction to Green Chemistry Principles of Green Chemistry and Designing a Chemical synthesis

			Examples of Green Synthesis/ Reactions and some real world cases Future Trends in Green Chemistry **Core C11 - P11 - Inorganic Chemistry IV Lab** Chromatography of metal ions **DSE2 - P2 - Green Chemistry Lab** Safer starting materials Using renewable resources Avoiding waste Use of enzymes as catalysts Alternative Green solvents Alternative sources of energy
Sri Saroj Kumar Modak	**Core C1 - T1 Organic Chemistry I** Bonding and Physical Properties General Treatment of Reaction Mechanism I Stereochemistry-I **Core C1A - T1 Organic Chemistry** Fundamentals of Organic Chemistry Stereochemistry Nucleophilic Substitution and Elimination Reactions Aliphatic Hydrocarbons Alkanes Alkenes Alkynes Reactions **Core C1 - P1 – Organic Chemistry I Lab** Separation Determination of boiling point Identification of a Pure Organic Compound **Core C1A - P1 Organic Chemistry Lab** Qualitative Analysis of Single Solid Organic Compound(s)	**Core C7 - T7 - Organic Chemistry III** Chemistry of alkenes and alkynes Aromatic Substitution Carbonyl and Related Compounds Organometallics **Core C1C – T3 Organic Chemistry II** Aromatic Hydrocarbons Organometallic Compounds Aryl Halides Alcohols, Phenols and Ethers Carbonyl Compounds **Core C7 - P7 - Organic Chemistry III Lab** Qualitative Analysis of Single Solid Organic Compounds **Core C1C – P3 Organic Chemistry Lab** Identification of a pure organic compound	**Core C12 - T12 - Organic Chemistry V** Carbocycles and Heterocycles Cyclic Stereochemistry Pericyclic reactions Carbohydrates Biomolecules **Core C12 - P12 - Organic Chemistry V Lab** Chromatographic Separations Spectroscopic Analysis of Organic Compounds

	2nd Semester	4th Semester	6th Semester
Dr. Swarup Kumar Maji	**Core C3 - T3 - Inorganic Chemistry II** Extra nuclear Structure of atom Chemical periodicity **Core C1B – T2 Inorganic Chemistry** Chemical Bonding and Molecular Structure Comparative study of p-block elements **Core C3 - P3 - Inorganic Chemistry II Lab** Acid and Base Titrations **Core C1B – P2 Inorganic Chemistry Lab** Qualitative semi-micro analysis of mixtures containing three radicals	**Core C9 - T9 - Inorganic Chemistry III** General Principles of Metallurgy Chemistry of s and p Block Elements Inorganic Polymers **Core C1D – T4 Inorganic Chemistry** Transition Elements Coordination Chemistry Crystal Field Theory Analytical and Industrial Chemistry **Core C9 - P9 - Inorganic Chemistry III Lab** Inorganic preparations **Core C1D – P4 Inorganic Chemistry Lab**	**Core C13 - T13 - Inorganic Chemistry V** Bioinorganic Chemistry Organometallic Chemistry Catalysis by Organometallic Compounds Reaction Kinetics and Mechanism **Core C13 - P13 - Inorganic Chemistry V Lab** Qualitative semimicro analysis
Sri Bivas Dey	**Core C1B – T2 Physical Chemistry** Kinetic Theory of Gases and Real gases Liquids Solids Chemical Kinetics **Core C1B – P2 Physical Chemistry Lab** Surface tension measurement Viscosity measurement Kinetics Study	**Core C8 - T8 - Physical Chemistry III** Application of Thermodynamics – II Electrical Properties of molecules Quantum Chemistry **Core C8 - P8 - Physical Chemistry III Lab**	**Core C14 - T14 - Physical Chemistry IV** Molecular Spectroscopy Photochemistry Surface phenomenon **DSE4 - T4 – Polymer Chemistry** Introduction and history of polymeric materials Functionality and its importance Kinetics of Polymerization Crystallization and crystallinity Nature and structure of polymers Determination of molecular weight of polymers Glass transition temperature (Tg) and determination of Tg Polymer Solution Properties of Polymer **Core C14 - P14 - Physical Chemistry IV Lab** **DSE4 - P4 – Polymer Chemistry Lab** Polymer Synthesis Polymer characterization

			Polymer analysis
Sri Soumen Rakshit	**Core C3 - T3 - Inorganic Chemistry II** Acid-Base reactions Redox Reactions and precipitation reactions **Core C3 - P3 - Inorganic Chemistry II Lab** Oxidation-Reduction Titrations	**Core C9 - T9 - Inorganic Chemistry III** Noble Gases Coordination Chemistry-I **Core C9 - P9 - Inorganic Chemistry III Lab** Complexometric titration	**DSE3 - T3 – Analytical Methods in Chemistry** Qualitative and quantitative aspects of analysis Optical methods of analysis Thermal methods of analysis Electroanalytical methods Separation techniques **DSE3 - P3 – Analytical Methods in Chemistry Lab** Separation Techniques – Chromatography Solvent Extractions Spectrophotometry
Sri Saroj Kumar Modak	**Core C4 - T4 - Organic Chemistry II** Stereochemistry II General Treatment of Reaction Mechanism II Substitution and Elimination Reactions **Core C4 - P4 - Organic Chemistry II Lab** Organic Preparations	**Core C10 - T10 - Organic Chemistry IV** Nitrogen compounds Rearrangements The Logic of Organic Synthesis Organic Spectroscopy **SEC2 - T2 - Pharmaceuticals Chemistry** Drugs & Pharmaceuticals Fermentation Hands On Practical **Core C1D – T4 Organic Chemistry** Carboxylic Acids and Their Derivatives Amines and Diazonium Salts Amino Acids and Carbohydrates **Core C10 - P10 - Organic Chemistry IV Lab** **Core C1D – P4 Organic Chemistry Lab**	**SEC4 - T4 – Analytical Clinical Biochemistry** Carbohydrates Proteins Enzymes Lipids Structure of DNA (Watson-Crick model) and RNA Biochemistry of disease Hands On Practical