



Department of Chemistry

Maulana Azad College

8, Rafi Ahmed Kidwai Road, Kolkata - 700013

Email: chemistry@maulanaazadcollegekolkata.ac.in

Website: <https://maulanaazadcollegekolkata.ac.in>

Syllabus: [View](#)

Curriculum / Lesson Plan : 2022-23

Undergraduate Honours / General Course (CBCS) under University of Calcutta

Semester, [Honours / General], [Period of Semester]	Course Code	Course Name	Brief Description of the Topics	Name of the Faculty	No. of Lectures
Sem - I Honours (July - December)	CC - 1	Inorganic Chemistry-1	Redox reactions Practical: Inorganic Chemistry-I (1) LAB	Dr. Ashis Kumar Mukherjee	24
			Acid-Base reactions Practical: Inorganic Chemistry-I (1) LAB	Dr. Goutam Kumar Mondal	22
			Extra nuclear structure of the atom Practical: Inorganic Chemistry-I (1) LAB	Dr. Sanju Das	24
		Organic Chemistry-1A	Bonding and Physical Properties - Valence Bond theory, Electronic displacements, MO theory	Dr. Sucheta Singha (Chandra)	12
			Bonding and Physical Properties - Physical properties; General Treatment of Reaction Mechanism I; Practical: Organic Chemistry-O (1A) LAB	Dr. Ajanta Mukherji	16
			Practical: Organic Chemistry-O (1A) LAB	Dr. Arijit Kundu	7
	CC - 2	Physical Chemistry-1	Kinetic Theory and Gaseous State, Transport processes; Practical: Physical Chemistry-P (1) LAB	Dr. Rajendra Saha	35
			Chemical Kinetics; Practical: Physical Chemistry-P (1) LAB	Dr. Subhodip Samanta	35
		Organic Chemistry-1B	Stereochemistry I: Optical activity of chiral compounds, General Treatment of Reaction Mechanism II	Prof. Tapan Kumar Karpha	8
			Stereochemistry I: Bonding geometries of carbon compounds, concept of chirality, relative and absolute configuration; Practical: Organic Chemistry-O (1B) LAB	Dr. Arijit Kundu	20
			Practical: Organic Chemistry-O (1B) LAB	Dr. Ajanta Mukherji	7



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Sem - I General (July - December)	GE - 1	GE-1	Theory: Kinetic Theory of Gases and Real Gases, Liquids	Dr. Rajendra Saha	15
			Theory: Chemical Kinetics	Dr. Subhodip Samanta	5
			Theory: Atomic structure, Chemical Periodicity, Acids and bases; Practical: Inorganic Quantitative	Dr. Sanju Das	45
			Practical: Inorganic Quantitative	Dr. Ashis Kumar Mukherjee	10
			Practical: Inorganic Quantitative	Dr. Goutam Kumar Mondal	10
			Theory: Fundamentals of Organic Chemistry	Dr. Ajanta Mukherji	5
			Theory: Stereochemistry, Nucleophilic Substitution and Elimination Reactions	Dr. Arijit Kundu	15
Sem - II Honours (January - June)	CC - 3	Organic Chemistry-2	Nucleophilic Substitution Reactions, Elimination Reactions; Practical: Organic Preparations	Prof. Tapan Kumar Karpfa	26
			Stereochemistry II: Conformation; Practical: Organic Preparations	Dr. Sucheta Singha (Chandra)	22
			Reaction Thermodynamics, Reaction Kinetics, Free-radical substitution reaction; Practical: Organic Preparations	Dr. Ajanta Mukherji	30
			Stereochemistry II: Chirality arising out of stereoaxis; Concept of prostereoisomerism; Tautomerism; Practical: Organic Preparations	Dr. Arijit Kundu	27
	CC - 4	Inorganic Chemistry-2	Radioactivity, Chemical Bonding-I; Practical: Inorganic Quantitative Analysis	Dr. Goutam Kumar Mondal	50
			Chemical Bonding-II; Practical: Inorganic Quantitative Analysis	Dr. Sanju Das	55
Sem - II General (January - June)	GE - 2	GE-2	Theory: Redox, Error Analysis and Computer Applications, Phase Equilibria, Solutions; Practical: Physical Chemistry Experiments	Dr. Rajendra Saha	40
			Theory: Chemical Thermodynamics, Chemical Equilibrium, Solids; Practical: Physical Chemistry Experiments	Dr. Subhodip Samanta	45
			Theory: Aliphatic Hydrocarbons	Dr. Arijit Kundu	20



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Sem - III Honours (July - December)	CC-5	Physical Chemistry-2	Chemical Thermodynamics-I and II, Systems of Variable Composition, Applications of Thermodynamics-I; Practical: Physical Chemistry Experiments	Dr. Rajendra Saha	50
			Chemical Equilibrium, Electrochemistry- Conductance and transport number, Ionic Equilibrium, Electromotive Force; Practical: Physical Chemistry Experiments	Dr. Subhodip Samanta	55
	CC-6	Inorganic Chemistry-3	Chemistry of s and p block elements	Dr. Ashis Kumar Mukherjee	15
			Coordination Chemistry-I, Noble Gases; Practical: Complexometric Titration, Chromatography of Metal Ions, Gravimetry	Dr. Goutam Kumar Mondal	43
			Chemical Periodicity, Inorganic Polymers; Practical: Complexometric Titration, Chromatography of Metal ions, Gravimetry	Dr. Sanju Das	47
	CC-7	Organic Chemistry-3	Carbonyl & related compounds: Exploitation of acidity of α -H of C=O; Practical: Identification of a Pure Compound, Quantitative Estimations	Prof. Tapan Kumar Karpna	15
			Chemistry of alkenes and alkynes; Practical: Identification of a Pure Compound, Quantitative Estimations	Dr. Sucheta Singha (Chandra)	27
			Aromatic substitution; Organometallics; Practical: Identification of a Pure Compound, Quantitative Estimations	Dr. Ajanta Mukherji	27
			Carbonyl & related compounds: Addition to C=O, Nucleophilic addition to α,β -unsaturated carbonyl system; Practical: Identification of a Pure Compound, Quantitative Estimations	Dr. Arijit Kundu	36
	SEC-A2	Analytical Clinical Biochemistry	Proteins, Enzymes	Dr. Sucheta Singha (Chandra)	10
			DNA and RNA, Biochemistry of Disease	Dr. Ajanta Mukherji	10
			Carbohydrates, Lipids, Lipoproteins	Dr. Arijit Kundu	10



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Sem - III General (July - December)	GE-3	GE-3	Theory: Comparative study of p-block elements, Transition elements; Practical: Inorganic Qualitative	Dr. Ashis Kumar Mukherjee	25
			Theory: Chemical Bonding and Molecular structure, Coordination Chemistry; Practical: Inorganic Qualitative	Dr. Goutam Kumar Mondal	25
			Practical: Inorganic Qualitative	Dr. Sanju Das	15
			Theory: Electrochemistry (Ionic equilibria, Conductance, Electromotive force)	Dr. Subhodip Samanta	20
			Theory: Aromatic Hydrocarbons, Aryl Halides	Prof. Tapan Kumar Karpa	10
			Theory: Organometallic Compounds	Dr. Ajanta Mukherji	10
Sem - IV Honours (January - June)	CC-8	Organic Chemistry-4	Rearrangements; Practical: Organic Qualitative Analysis	Prof. Tapan Kumar Karpa	26
			Organic Spectroscopy; Practical: Organic Qualitative Analysis	Dr. Sucheta Singha (Chandra)	32
			Logic of Organic Synthesis; Practical: Organic Qualitative Analysis	Dr. Ajanta Mukherji	26
			Nitrogen Compounds; Practical: Organic Qualitative Analysis	Dr. Arijit Kundu	24
	CC-9	Physical Chemistry-3	Application of Thermodynamics II; Practical: Physical Chemistry Experiments	Dr. Rajendra Saha	40
			Foundation of Quantum Mechanics; Crystal Structure; Practical: Physical Chemistry Experiments	Dr. Subhodip Samanta	65
	CC-10	Inorganic Chemistry-4	Coordination Chemistry II; Practical: Inorganic Preparation, Instrumentation Techniques	Dr. Goutam Kumar Mondal	50
			Chemistry of d and f block elements, Reaction Kinetics and Mechanism; Practical: Inorganic Preparation, Instrumentation Techniques	Dr. Sanju Das	55
	SEC-B2	Pesticide Chemistry	Organochlorines (DDT, Gammaxene)	Dr. Sucheta Singha (Chandra)	10
			General Introduction to Pesticides, Organophosphates (Malathion, Parathion), Quinones (Chloranil)	Dr. Ajanta Mukherji	10
			Carbamates (Carbofuran, Carbaryl), Anilides (Alachlor, Butachlor)	Dr. Arijit Kundu	10



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Sem - IV General (January - June)	GE-4	GE-4	Theory: Alcohols, Phenols and ethers; Carbohydrates	Prof. Tapan Kumar Karcha	10
			Theory: Carboxylic acids and their derivatives; Amino acids	Dr. Sucheta Singha (Chandra)	10
			Theory: Carbonyl compounds; Amines and Diazonium salts; Practical: Identification of Pure Organic Compound	Dr. Ajanta Mukherji	30
			Practical: Qualitative Analysis of Solid Organic Compound	Dr. Arijit Kundu	25
			Theory: Crystal Field Theory	Dr. Goutam Kumar Mondal	10
			Theory: Quantum Chemistry & Spectroscopy	Dr. Rajendra Saha	20
Sem - V Honours (July - December)	CC-11	Physical Chemistry-4	Quantum Chemistry II, Numerical Analysis; Practical: Computer Programs (Using FORTRAN or C or C++)	Dr. Rajendra Saha	60
			Statistical Thermodynamics; Practical: Computer Programs (Using FORTRAN or C or C++)	Dr. Subhodip Samanta	45
	CC-12	Organic Chemistry-5	Carbohydrates	Prof. Tapan Kumar Karcha	14
			Cyclic Stereochemistry, Pericyclic Reactions; Practical: Chromatographic Separations	Dr. Sucheta Singha (Chandra)	23
			Heterocycles, Biomolecules: Nucleic acids; Practical: Chromatographic Separations, Spectroscopic Analysis of Organic Compounds	Dr. Ajanta Mukherji	36
			Carbocycles, Biomolecules: Amino acids, Peptides; Practical: Chromatographic Analysis of Organic Compounds	Dr. Arijit Kundu	32
	DSE-A2	DSE-A2	Applications of Computers in Chemistry; Practical	Dr. Rajendra Saha	55
			Applications of Computers in Chemistry; Practical	Dr. Subhodip Samanta	50
	DSE-B1	Inorganic Materials of Industrial Importance	Batteries, Alloys, Catalysis; Practical	Dr. Ashis Kumar Mukherjee	42
			Fertilizers, Surface Coatings; Practical	Dr. Goutam Kumar Mondal	43
			Silicate Industries, Chemical Explosives	Dr. Sanju Das	20



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Sem - VI Honours (January - June)	CC-13	Inorganic Chemistry-5	Theoretical principles in Qualitative Analysis, Organometallic Chemistry; Practical: Qualitative Semi-micro Analysis of Mixtures	Dr. Goutam Kumar Mondal	55
			Bioinorganic Chemistry; Practical: Qualitative Semi-micro Analysis of Mixtures	Dr. Sanju Das	50
	CC-14	Physical Chemistry-5	Surface phenomenon, Dipole Moment, Polarizability & Theory of Reaction Rate; Practical: Physical Chemistry Experiments	Dr. Rajendra Saha	45
			Molecular Spectroscopy, Photochemistry; Practical: Physical Chemistry Experiments	Dr. Subhodip Samanta	60
	DSE-A3	Green Chemistry and Chemistry of Natural Products	Alkaloids; Terpenes; Practical: Green Chemistry Experiments	Prof. Tapan Kumar Kapha	8
			Principles of Green Chemistry and Designing a Chemical Synthesis; Practical Green Chemistry Experiments	Dr. Sucheta Singha (Chandra)	31
			Introduction to Green Chemistry; Examples of Green Synthesis (Ultrasound assisted reactions; Green counterpart of common organic reactions); Future Trends in Green Chemistry (Oxidation reagents and catalysts; Biomimetic, multifunctional reagents; Green Chemistry in sustainable development); Practical: Green Chemistry Experiments	Dr. Ajanta Mukherji	35
			Examples of Green Synthesis (Green synthesis of compounds; Microwave assisted reactions in water, Rearrangement reactions by green approach); Future Trends in Green Chemistry (Combinatorial green chemistry; Proliferation of solventless reactions); Practical: Green Chemistry Experiments	Dr. Arijit Kundu	31
	DSE-B4	Dissertation	In a total of 105 lecture hours, a student has to carry out research/ review on a topic assigned by the teacher. A project report and digital presentation will be required for the assessment of the student at the end of the semester.	Dr. Rajendra Saha Dr. Subhodip Samanta Dr. Sanju Das Dr. Ajanta Mukherji Dr. Arijit Kundu	105

Kapha

Head

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Govt. Of West Bengal