

Syllabus Module

Department of Chemistry Khatra Adibasi Mahavidyalaya

Session 2023-2024

Faculty Name	1 st Semester	3 rd Semester	5 th Semester
	(NEP Major & Minor)	(CBCS New)	(CBCS Old)
	<u>Major (MJC-1)</u>	Core T6-Inorganic	Core C11 - T11 - Inorganic
	1. Core T-1-Fundamentals	Chemistry II (4 Credits)	Chemistry IV
	of Chemistry I (3 Credits)	Chemical Bonding-I	Coordination Chemistry-II
	•	Chemical Bonding-II	
Dr. Swarup	• Extra Nuclear Structure of	Radioactivity	Core C11 - P11 - Inorganic
Kumar Maji	Atom (8 Lectures)		Chemistry IV Lab
5	• Chemical Periodicity (6	Core C6 - P6 - Inorganic	Gravimetry
	Lectures)	Chemistry II Lab	5
	• Acids and bases (6	(2 Credits)	Total Lectures (C11): 60
	I ectures)	Iodo / Iodimetric Titrations	
	• Deday and Presipitation	Estimation of metal content	
	• Redox and Trecipitation Deactions (10 Leastures)	in some selective samples	
	Reactions (10 Lectures)	F	
	Coro P-1-Chomical	Total Lectures (T6+C6):	
	Analysis I ab (1 Cradit)	90	
	Analysis Lab (1 Credit)		
	• Acid Pasa Titrations (10		
	• Actu-Base Initiations (10		
	Lectures)		
	• Oxidation-Reduction		
	1 itrimetry (10 Lectures)		
	<u>Millior (Mill - 1)</u> 1 Core T 1 Eurodemontale		
	1. Core 1-1-Fundamentals		
	of Chemistry I (3 Credits)		
	- Entre Nuclear Structure of		
	• Extra Nuclear Structure of		
	Atom (8 Lectures)		
	• Chemical Periodicity (6		
	Lectures)		
	• Acids and bases (6		
	Lectures)		
	• Redox and Precipitation		
	Reactions (10 Lectures)		
	P-1-Chemical Analysis Lab		
	(1 Creait)		
	A aid Daga Titutions (10		
	• Acid-Base litrations (10		
	Lectures)		

	Oxidation-Reduction		
	Titrimetry (10 Lectures)		
	Total Lectures: 50 (Major)		
	Total Lectures: 50 (Minor)		
	Multidiscinlinary (MD - 1)	Core C5 - T5 - Physical	DSF1 - T1 - Advanced
	With the sciplinary (WD - 1)	Chemistry II	Physical Chemistry
	Basic Chemistry (3 Credits)	(4 Credits)	Crystal Structure
		Transport processes	Statistical Thermodynamics
	Total Lectures: 45	Thermodynamics II	Special selected topics
		Applications of	
		Thermodynamics I	SEC3 - T3 - IT Skills for
		Foundation of Quantum	Chemists
		Mechanics	Mathematics
Dr. Ramakanta			Computer programming
Mondal		GE 13 – Physical	Hands On Practical
		(2 Credita)	
		(2 Creans) Chemical Energetics	DSF1 - P1 - Advanced
		Chemical Equilibrium	Physical Chemistry Lab
		Conductance	Computer Programming based
			on numerical methods
		Core C5 - P5 - Physical	
		Chemistry II Lab	Total Lectures (SEC3): 40
		(2 Credits)	Total Lectures (DSE1): 80
		GE P3 – Physical	
		Chemistry-II Lab.	
		(1 Credits)	
		Thermochemistry	
		Conductance	
		Total Lectures	
		(T5+P5): 60	
		Total Lectures	
	Skill Enhancomont Course	(GE 13+P3): 30 SEC T1 Basia	Coro C11 T11 Inorgania
	(SFC - 1)	Analytical Chemistry	Core CII - III - morganic Chemistry IV
	(3EC - 1)	(2 Credits)	Chemistry of d- and f- block
	Basic Analytical Chemistry	Introduction	elementsTransition Elements
	(3 Credits)	Analysis of soil	Lanthanoids and Actinoids
	Analysis of Soil	Analysis of water	
	Analysis of Water	Analysis of food products	DSE2 - T2 - Green Chemistry
	Analysis of Food Products	Chromatography	Introduction to Green Chemistry
	Analysis of Cosmetics	Ion-exchange	Principles of Green Chemistry
Sri Soumen	Suggested Applications	Analysis of cosmetics	and Designing a Chemical
Kakshit	Suggested Instrumental	Suggested Applications	synthesis Examples of Crean Southesis/
	Demonstrations	demonstrations	Examples of Green Synthesis/ Reactions and some real world
		aomonstrations	cases
	Total Lectures (SEC1): 45	Total Lectures (SEC1):	Future Trends in Green
		40	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
			Total Lectures (C11): 20
			Total Lectures (DSE2): 80
			Total Lectures (DSE2). 60
		Core T7 - Organic	Core C12 - T12 - Organic
	Core T-1-Fundamentals of	Chemistry III	Chemistry V
	Chemistry I (3 Credits)	(4 Credits)	Carbocycles and Heterocycles
	• Bonding and Dhysical	Chemistry of alkenes and	Cyclic Stereochemistry
	Bonding and Filysical	allying	Deriovalia reactions
	Properties of Organic	Aromatic Substitution	Carbohydratos
	Compounds	Component and Delated	Diamologylas
	• Stereocnemistry I	Compounds	Diomolecules
		Compounds	Com C12 D12 Organia
	(15 Lectures)	Organometanics	Core C12 - P12 - Organic
			Chemistry v Lab
	Core P-1-Chemical	Core P7 - Organic	Chromatographic Separations
	Analysis Lab (1 Credit)	Chemistry III Lab	Spectroscopic Analysis of
		(2 Credits)	Organic Compounds
	• Estimation of Organic	Qualitative Analysis of	
	Compounds	Single Solid Organic	Total Lectures (C12): 80
		Compounds	
Sri Saroj	(30 Lectures)		
Modak		GE T3 –Organic	
	Total Lectures: 45	Chemistry-II	
		(2 Credits)	
		Aromatic Hydrocarbons	
		Organometallic	
		Compounds	
		Aryl Halides	
		Alcohols, Phenols and	
		Ethers	
		Carbonyl Compounds	
		GE P3 – Physical	
		Chemistry-II & Organic	
		Chemistry-II Lab.	
		(1 Credits)	
		Identification of a pure	
		organic compound	
		Total Lectures	
		(T7+P7): 60	
		Total Lectures	
		(GE T3+P3): 30	

Tentative date of internal assessment: Mid of December 2023

Session 2023-2024

T	and G (4th G	cth a
<u>Faculty</u> Name	<u>2nd Semester</u> (NEP Major & Minor)	(CBCS Now)	<u>6^m Semester</u> (CBCS Old)
Dr. Sworup	(NEI Major & Millor) Multidisciplinary (MD 2)	<u>(CDCS New)</u> Coro T0 Inorgania	<u>(CDCS OIU)</u> Core C13 T13 Inorgania
DI. Swalup Kumar Maji	Multidiscipillary (MD - 2)	Core 19 - morganic Chomistry III	Core C13 - 115 - morganic Chomistry V
Kulliai Maji	Chemistry in Daily Life	(3 Crodits)	Bioinorganic Chemistry
	(3 Credits)	General Principles of	Organometallic Chemistry
	(5 cicdits)	Metallurgy	Catalysis by Organometallic
	Total Lectures: 45	Chemistry of s and p Block	Compounds
	Total Lectures. 45	Flements	Reaction Kinetics and
		Inorganic Polymers	Mechanism
		Core P9 - Inorganic	Core C13 - P13 - Inorganic
		Chemistry III Lab.	Chemistry V Lab
		(1 Credits)	Qualitative semimicro
		Inorganic preparations	analysis
			Total Lectures (C13): 80
		GE T4: Inorganic	
		Chemistry-III, Analytical,	
		Industrial Chemistry	
		(2 Credits)	
		Inorganic Chemistry-III	
		Analytical and Industrial	
		Chemistry	
		CE DA La La La	
		GE P4 – Inorganic	
		Chemistry-III, Analytical,	
		Industrial Chemistry Lab	
		(I Creans)	
		morganic Chemistry-III	
		Total Lectures	
		(T9+P9): 40	
		Total Lectures	
		(GE T4+P4): 20	
	<u>Major</u>	Core T8 - Physical	Core C14 - T14 - Physical
		Chemistry III	Chemistry IV
	Core T-2-Fundamentals of	(4 Credits)	Molecular Spectroscopy
	Chemistry II (3 Credits)	Application of	Photochemistry
	~ .	Thermodynamics – II	Surface phenomenon
	• Gaseous state I	Molecular Spectroscopy I	DCE4 TA DI
	• (12 Lectures)	Electrical Properties of	DSE4 - 14 – Polymer
	• Liquid State		Introduction and history of
	• (6 Lectures)	Core D8 - Develoal	nolymeric materials
	• Thermodynamics I	Chemistry III I ab	Functionality and its
	(12 Lectures)	(2 Credits)	importance
	Cono D 2 Dharris Charry's 1	Total Lectures (T8+P8): 60	Kinetics of Polymerization
	A nalvoia Laboratory		Crystallization and
	Analysis Laboratory (1 Credit)		crystallinity
Dr.	• Dhysical Chamistry Dreatical		Nature and structure of
Ramakanta	• r Hysical Chemisury Practical (15 L actures)		polymers
Mondal	(13 Lectures)		

	Minor (MN-2) T-2-Fundamental of Chemistry II (3 Credits) • Gaseous state I • (12 Lectures) • Liquid State • (6 Lectures) • Thermodynamics I (12 Lectures) Core P-2-Physico-Chemical Analysis Laboratory (1 Credit) • Physical Chemistry Practical (15 Lectures) Total Lectures: 45 (Major)		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 Total Lectures (C14): 80 Total Lectures (DSE4): 80
	Total Lectures: 45 (Minor)		
Sri Soumen	Skill Enhancement Course	Core T9 - Inorganic	DSE3 - T3 – Analytical
Rakshit	(SEC - 2)	Chemistry III	Methods in Chemistry
	Dhamma agusti ag la Chamister	(1 Credits)	Qualitative and quantitative
	(Credite 3)	Noble Gases	aspects of analysis
	(Credits - 5)	Coordination Chemistry-1	Thermal methods of analysis
	• Drugs & Pharmaceuticals	Core P9 - Inorganic	Electroanalytical methods
	Fermentation	Chemistry III Lab.	Separation techniques
	Hands on Practical	(1 Credits)	
	• Hands on Hactical		DSE3 - P3 – Analytical
	Total Lectures: 45	Complexometric titration	Methods in Chemistry Lab
		-	Separation Techniques –
		Total Lectures	Chromatography
		(T9+P9): 30	Solvent Extractions
			Spectrophotometry
		C 1710 C ·	Total Lectures (DSE3): 80
	<u>Major</u>	Core T10 - Organic	SEC4 - T4 – Analytical
	Core T-2-Fundamentals of	(4 Credits)	Carbohydrates
	Chemistry II (3 Credits)	Nitrogen compounds	Proteins
		Rearrangements	Enzymes
	• General treatment of Organic	The Logic of Organic	Lipids
	Reaction Mechanism I	Synthesis	Structure of DNA (Watson-
	(10 Lectures)	Organic Spectroscopy	Crick model) and RNA
	• Stereochemistry II		Biochemistry of disease
	(5 Lectures)	Core P10 - Organic Chemistry IV Lab	Hands On Practical
	Core P-2-Dhysica Chamical	(2 Credits)	Total Lectures (SEC4) • 40
	Analysis Laboratory		
Sri Saroj	(1 Credit)	SEC T2 - Pharmaceuticals	
Modak	• Identification of Pure Organic	Chemistry	
	Compounds	(2 Credits)	
	(15 Lectures)	Drugs & Pharmaceuticals Fermentation	

Minor	Hands On Practical	
T-2-Fundamental of Chemi II (3 Credits)	stry GE T4: Organic Chemistry-III (2 Credits)	
 General treatment of Organia Reaction Mechanism I (10 Lectures) Stereochemistry II (5 Lectures) 	c Carboxylic Acids and Their Derivatives Amines and Diazonium Salts Amino Acids and Carbohydrates	
Core P-2-Physico-Cher Analysis Laboratory (1 Credit) • Identification of Pure Organ Compounds (15 Lectures) Total Lectures: 45 (Major) Total Lectures: 45 (Minor)	mical GE P4 Organic Chemistry- III Lab (1 Credits) Total Lectures (T10+P10): 30 Total Lectures (SEC T2): 20 Total Lectures (GE T4): 20	
Tentative date of internal assessment: Mid of May 2024		