



E.M.GOPALAKRISHNAKONEYADAVAWOMEN'SCOLLEGE
An Autonomous Institution -Affiliated to Madurai Kamaraj University
Re-accredited(3rd Cycle)with Grade A⁺ and CGPA3.51by NAAC

LESSON PLAN

2024-2025

Class : I B.Sc Zoology

Sem : II

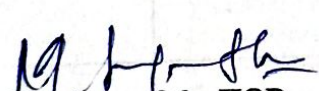
Sub. Code : 23OUZOGECH2

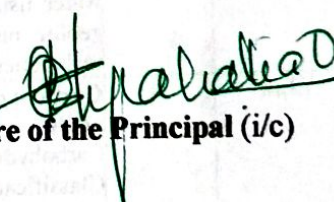
Title of the Paper: CHEMISTRY FOR BIOLOGICAL SCIENCES II

Total Hours : 60

Month	Unit	Description of the Syllabus	Class	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
Dec	I	Co-ordination Chemistry and Water Technology Co-ordination Chemistry: Definition of terms - IUPAC Nomenclature- Werner's theory - EAN rule - Pauling's theory - Postulates - Applications to [Ni(CO) ₄], [Ni(CN) ₄] ²⁻ , [Co(CN) ₆] ³⁻ Chelation - Biological role of Hemoglobin and Chlorophyll (elementary idea) -Applications in qualitative and quantitative analysis. Water Technology: Hardness of water, determination of hardness of water using EDTA method, zeolite method-Purification techniques -BOD and COD.	I B.Sc Zoology	12	Chalk and Talk Seminar, Group Discussion	
Jan	II	Carbohydrates Classification, preparation and properties of glucose and fructose. Discussion of open chain ring structures of glucose and fructose. Glucose-fructose interconversion. Preparation and properties of sucrose, starch and cellulose.	I B.Sc Zoology	11	Chalk and Talk Seminar, Group Discussion	
Feb	III	Amino Acids and Essential elements of biosystem Classification - preparation and properties of alanine, preparation of dipeptides using Bergmann method - Proteins- classification - structure - Colour reactions - Biological functions - nucleosides - nucleotides - RNA and DNA - structure. Essentials of trace metals in biological system- Na, Cu, K, Zn, Fe, Mg.	I B.Sc Zoology	12	Chalk and Talk Seminar, Group Discussion	

March	IV	Electrochemistry Galvanic cells - Standard hydrogen electrode - calomel electrode - standard electrode potentials - electrochemical series. Strong and weak electrolytes - ionic product of water - pH, pKa, pKb. Conductometric titrations - pH determination by colorimetric method - buffer solutions and its biological applications - electroplating - Nickel and chrome plating - Types of cells - fuel cells - corrosion and its prevention.	I B.Sc Zoology	13	Chalk and Talk Seminar, Group Discussion	
April	V	Photochemistry Grothus - Drapper's law and Stark-Einstein's law of photochemical equivalence, Quantum yield - Hydrogen - chloride reaction. Phosphorescence, fluorescence, chemiluminescence and photosensitization and photosynthesis (definition with examples).	I B.Sc Zoology	12	Chalk and Talk Seminar, Group Discussion	


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LESSON PLAN

2024-2025

Class : I B.Sc Mathematics

Sem : II

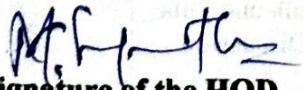
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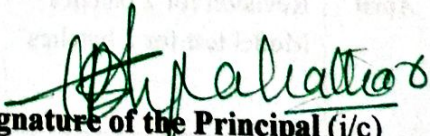
Title of the Paper: CHEMISTRY FOR PHYSICAL SCIENCES II

Total Hours : 60

Month	Unit	Description of the Syllabus	Class	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
Dec	I	Co-ordination Chemistry and Water Technology Co-ordination Chemistry: Definition of terms - IUPAC Nomenclature- Werner's theory - EAN rule - Pauling's theory - Postulates - Applications to $[\text{Ni}(\text{CO})_4]$, $[\text{Ni}(\text{CN})_4]^{2-}$, $[\text{Co}(\text{CN})_6]^{3-}$ Chelation - Biological role of Hemoglobin and Chlorophyll (elementary idea) - Applications in qualitative and quantitative analysis. Water Technology: Hardness of water, determination of hardness of water using EDTA method, zeolite method-Purification techniques -BOD and COD.	I B.Sc Maths	12	Chalk and Talk Seminar, Group Discussion	
Jan	II	Carbohydrates and Amino acids Carbohydrates: Classification, preparation and properties of glucose, fructose and sucrose. Discussion of open chain ring structures of glucose and fructose. Glucose - fructose interconversion. Properties of starch and cellulose. Amino acids: Classification - preparation and properties of alanine, preparation of dipeptides using Bergmann method. RNA and DNA (elementary idea only).	I B.Sc Maths	12	Chalk and Talk Seminar, Group Discussion	

Feb	III	Electrochemistry Galvanic cells - Standard hydrogen electrode - calomel electrode - standard electrode potentials -electrochemical series. Strong and weak electrolytes - ionic product of water -pH, pKa, pKb. Conductometric titrations - pH determination by colorimetric method – buffer solutions and its biological applications - electroplating - Nickel and chrome plating – Types of cells -fuel cells-corrosion and its prevention.	I B.Sc Maths	12	Chalk and Talk Seminar, Group Discussion	
March	IV	Kinetics and Catalysis Order and molecularity. Integrated rate expression for I and II (2A → Products) order reactions. Pseudo first order reaction, methods of determining order of a reaction – Half-life period – Catalysis - homogeneous and heterogeneous, catalyst used in Contact and Haber's processes. Concept of energy of activation and Arrhenius equation.	I B.Sc Maths	12	Chalk and Talk Seminar, Group Discussion	
April	V	Photochemistry Grothus - Drapper's law and Stark-Einstein's law of photochemical equivalence, Quantum yield - Hydrogen - chloride reaction. Phosphorescence, fluorescence, chemiluminescence and photosensitization and photosynthesis (definition with examples).	I B.Sc Maths	12	Chalk and Talk Seminar, Group Discussion	


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LESSON PLAN

2024-2025

Class : I B.Sc Mathematics

Sem : II

Sub. Code : 23OUMAGECH2P

Title of the Paper: Chemistry Practical for Physical Sciences -II

Total Hours : 60

Month	Description of the Syllabus	Class	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
Dec	Instruction Demonstration for Detection of special elements, Aromatic and aliphatic nature, Test for saturation and unsaturation	I B.Sc Maths	12	Demonstration , Chalk and Talk, Discussion	
Jan	Identification of functional groups for 2 batches Derivative preparation for 2 batches	I B.Sc Maths	12	Demonstration , Chalk and Talk, Discussion	
Feb	Analysis of organic salt – I for 2 batches Analysis of organic salt – II for 2 batches Analysis of organic salt – III for 2 batches	I B.Sc Maths	12	Demonstration , Chalk and Talk, Discussion	
March	Analysis of organic salt – IV for 2 batches Analysis of organic salt – V for 2 batches Analysis of organic salt – VI for 2 batches	I B.Sc Maths	12	Demonstration , Chalk and Talk, Discussion	
April	Revision for 2 batches Model test for 2 batches	I B.Sc Maths	12	Demonstration , Chalk and Talk, Discussion	

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LESSON PLAN

2024-2025

Class : I B.Sc Zoology

Sem : II

Sub. Code : 23OUZOGCH2P

Title of the Paper: Chemistry Practical for Biological Sciences -II

Total Hours : 60.

Month	Description of the Syllabus	Class	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
Dec	Instruction Demonstration for Detection of special elements, Aromatic and aliphatic nature, Test for saturation and unsaturation	I B.Sc Zoology	12	Demonstration , Chalk and Talk, Discussion	
Jan	Identification of functional groups for 2 batches Derivative preparation for 2 batches	I B.Sc Zoology	12	Demonstration , Chalk and Talk, Discussion	
Feb	Analysis of organic salt – I for 2 batches Analysis of organic salt – II for 2 batches Analysis of organic salt – III for 2 batches	I B.Sc Zoology	12	Demonstration , Chalk and Talk, Discussion	
March	Analysis of organic salt – IV for 2 batches Analysis of organic salt – V for 2 batches Analysis of organic salt – VI for 2 batches	I B.Sc Zoology	12	Demonstration , Chalk and Talk, Discussion	
April	Revision for 2 batches Model test for 2 batches	I B.Sc Zoology	12	Demonstration , Chalk and Talk, Discussion	

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LESSON PLAN

2024-2025

Class : II B.Sc Mathematics

Sem : IV

Sub. Code : 23OUMAGECH4

Title of the Paper: Chemistry for Physical Sciences -IV

Total Hours : 60

Month	Unit	Description of the Syllabus	Class	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
Dec	I	Anaesthetics, Analgesics and Antipyretics: Anaesthetics: Definition-characteristics-classification-application of nitrous oxide, chloroform and cocaine. Analgesics: Definition-mode of action-specific applications of antipyrine, aspirin, ibuprofen. Antipyretics: Definition-mode of action-medicinal uses of salol and paracetamol.	II B.Sc Maths	12	Chalk and Talk Seminar, Group Discussion	
Jan	II	Sulpha Drugs, Antibiotics and Antiseptics: Sulpha drugs: Definition-mode of action-applications of sulphanilamide, sulphapyridine and sulphadiazine. Antibiotics: Definition- characteristics-mode of action- structure and uses of the following antibiotics- penicillins, streptomycin, chloramphenicol, erythromycin and tetracyclins. Antiseptics: Definition-types of antiseptics-difference between antiseptic and disinfectant.	II B.Sc Maths	12	Chalk and Talk Seminar, Group Discussion	
Feb	III	Colloids: Definition - size of colloidal particles - classification-differences between	II B.Sc Maths	12	Chalk and Talk Seminar, Group Discussion	



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LESSON PLAN

2024-2025

Class : II B.Sc Mathematics

Sem : IV

Sub. Code : 22OUMAGECH4P

Title of the Paper: Chemistry Practical for Physical Sciences -IV

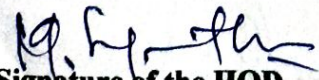
Total Hours : 60

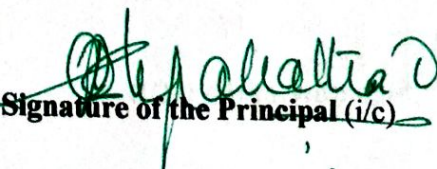
Month	Description of the Syllabus	Class	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
Dec	Instruction Demonstration Analysis of Anions (Acid radical) Demonstration Analysis of Cations (Basic radical)	II B.Sc Maths	12	Demonstration , Chalk and Talk, Discussion	
Jan	Analysis of Anions for 2 batches Analysis of Cations for 2 batches	II B.Sc Maths	12	Demonstration , Chalk and Talk, Discussion	
Feb	Analysis of inorganic salt – I for 2 batches Analysis of inorganic salt – II for 2 batches Analysis of inorganic salt – III for 2 batches	II B.Sc Maths	12	Demonstration , Chalk and Talk, Discussion	
March	Analysis of inorganic salt – IV for 2 batches Analysis of inorganic salt – V for 2 batches Analysis of inorganic salt – VI for 2 batches	II B.Sc Maths	12	Demonstration , Chalk and Talk, Discussion	
April	Revision for 2 batches Model test for 2 batches	II B.Sc Maths	12	Demonstration , Chalk and Talk, Discussion	

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		lyophilic sols and lyophobic sols - preparation of sols-dispersion Method :Bredig's arc method, peptization -properties: Optical property-tyndall effect , kinectic property-brownian movement ,electrical property-electrical double layer-application of colloids - colloidal medicines, sewage disposal, purification of water, artificial rain.				
March	IV	Green Chemistry: Need for Green chemistry-Goals of Green chemistry-Limitations/Obstacles-The progress of Green chemistry-Twelve principles of Green chemistry-Concept of Atom economy (Rearrangement reactions, Addition reactions, Substitution reactions and Elimination reactions)-Concept of selectivity (Chemoselectivity, Regioselectivity, Enantioselectivity and Diastereoselectivity)	II B.Sc Maths	12	Chalk and Talk Seminar, Group Discussion	
April	V	Nano Chemistry: Characterisation of Nano materials-Stability of Colloidal solutions-Synthesis of metal Nanoparticles by physical methods (Laser Ablation, Physical Vapour Deposition (Evaporation and Sputtering) - Synthesis by chemical methods (Thermolysis, Sonochemical Approach, Reduction by hydrogen, and Alkali metal reductions)-Biosynthesis of Nanoparticles.	II B.Sc Maths	12	Chalk and Talk Seminar, Group Discussion	


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