Lesson plan of 2024-25
(2nd SEMESTER)

DEPARTMENT: MATH & SCIENCE	SEMESTER:2nd	NAME OF THE TEACHING FACULTY: MISS DIPTI LAXMI BHUYAN MISS RASMI PRABHA SAHU
SUBJECT: Applied Chemistry Th 9 (b)	NO.OF CLASSES ALLOTTED PER WEEK: 4	SEMESTER FROM : 04/02/2025 To 17/05/2025 NO.OF WEEKS:15
WEEK	CLASS DAY	THEORY TOPICS 1) Unit 1: Atomic Structure, Chemical Bonding and Solutions
1st	1st	Rutherford model of atom, Bohr's theory (expression of energy and radius to be omitted)
	2nd	Hydrogen spectrum explanation based on Bohr's model of atom
	3rd	Heisenberg uncertainty principle, Quantum numbers – orbital concept
	4th	Shapes of s,p and d orbitals, Pauli's exclusion principle
2nd	1st	Hund's rule of maximum multiplicity
	2nd	Aufbau rule, electronic configuration & examples
	3rd	Concept of chemical bonding – cause of chemical bonding
	4th	Types of bonds: ionic bonding (NaCl example)
3rd	1st	Covalent bond (H2, F2, HF hybridization in BeCl2, BF3, CH4, NH3, H2O)
	2nd	Coordination bond in NH4 +, and anomalous properties of NH3,
	3rd	H2O due to hydrogen bonding, and metallic bonding
	4th	Solution - idea of solute, solvent and solution
4th	1st	Methods to express the concentration of solution molarity (M = mole per liter)
	2nd	Discuss about ppm, mass percentage, volume percentage and mole fraction.
	3rd	**Unit 2: Water** Graphical presentation of water distribution on Earth (pie or bar diagram).
	4th	Classification of soft and hard water based on soap test
5th	1st	Salts causing water hardness, unit of hardness and simple numerical on water hardness.
	2nd	Cause of poor lathering of soap in hard water & previous class discussion
	3rd	Problems caused by the use of hard water in boiler (scale and sludge, foaming and priming, corrosion etc)
	4th	Quantitative measurement of water hardness by ETDA method

6th	1st	Total dissolved solids (TDS) alkalinity estimation.
	2nd	Water softening techniques - soda lime process, zeolite process and ion exchange process.
	3rd	Municipal water treatment (in brief only) - sedimentation, coagulation, filtration, sterilization.
	4th	Water for human consumption for drinking and cooking purposes from any water sources and enlist Indian standard specification of drinking water
7th	1st	**Unit 3: Engineering Materials** Natural occurrence of metals - minerals, ores of iron, aluminium and copper
	2nd	Gangue (matrix), flux, slag, metallurgy - brief account of general principles of metallurgy.
	3rd	Extraction of - iron from haematite ore using blast furnace, aluminium from bauxite along with reactions
	4th	Alloys - definition, purposes of alloying, ferrous alloys
8th	1st	Nonferrous with suitable examples, properties and applications.& Class test - 1
	2nd	General chemical composition, composition based applications (elementary idea only details omitted)
	3rd	Port land cement and hardening & Discussion
	4th	Glasses Refractory and Composite materials.
9th	1st	Polymers - monomer, homo and co polymers, degree of polymerization
	2nd	Simple reactions involved in preparation and their application of thermoplastics
	3rd	thermosetting plastics (using PVC, PS, PTFE, nylon - 6, nylon-6,6 and Bakelite
	4th	Rubber and vulcanization of rubber.
10th	1st	**Unit 4: Chemistry of Fuels and Lubricants** Definition of fuel and combustion of fuel
	2nd	Classification of fuels, calorific values (HCV and LCV)
	3rd	Calculation of HCV and LCV using Dulong's formula & numericals
	4th	Proximate analysis of coal solid fuel & discussion
11th	1st	petrol and diesel - fuel rating (octane and cetane numbers)
	2nd	Chemical composition, calorific values
	3rd	Applications of LPG, CNG, water gas, coal gas, producer gas and biogas.
	4th	Lubrication - function and characteristic properties of good lubricant
12th	1st	Classification with examples, lubrication mechanism - hydrodynamic and boundary lubrication
	2nd	Physical properties (viscosity and viscosity index, oiliness)
	3rd	Physical properties (flash and fire point, could and pour point only)
	4th	Chemical properties (coke number,total acid number saponification value) of lubricants.

13th	1st	**Unit 5: Electro Chemistry** Electronic concept of oxidation, reduction and redox reactions.
	2nd	Definition of terms: electrolytes, non-electrolytes with suitable examples
	3rd	Faradays laws of electrolysis and simple numerical problems
	4th	Industrial Application of Electrolysis - Electrometallurgy
14th	1st	Industrial Application of Electrolysis - Electroplating
	2nd	Industrial Application of Electrolysis - Electrolytic refining
	3rd	Application of redox reactions in electrochemical cells – Primary cells - dry cell
	4th	Application of redox reactions in electrochemical cells- Secondary cell - commercially used lead storage battery, fuel and
15th	1st	Definition, types of corrosion (chemical and electrochemical)
	2nd	H_2 liberation and O_2 absorption mechanism of electrochemical corrosion, factors affecting rate of corrosion
	3rd	Internal corrosion preventive measures – Purification, alloying and heat treatment
	4th	External corrosion preventive measures: a) metal (anodic, cathodic) coatings, b) organic inhibitors

Lesson plan of 2024-25
(2nd SEMESTER)

DEPARTMENT: MATH & SCIENCE	SEMESTER:2nd	NAME OF THE TEACHING FACULTY: MISS DIPTI LAXMI BHUYAN MISS RASMI PRABHA SAHU
SUBJECT: Applied Chemistry Lab	NO.OF CLASSES ALLOTTED PER WEEK: 1	SEMESTER FROM : 04/02/2025 To 17/05/2025 NO.OF WEEKS:15
WEEK	CLASS PERIOD	PRACTICAL
1st	1st	Introduction to Chemistry Lab
	2nd	
2nd	1st	Identification of apparatus & fire safety instructions
	2nd	
3rd	1st	Preparation of standard solution of oxalic acid or potassium permanganate
	2nd	
4th	1st	To determine strength of given sodium hydroxide solution by titrating against standard oxalic acid solution using phenolphthalein indicator
	2nd	
5th	1st	Standardization of KMnO4 solution using standard oxalic acid and Determine the percentage of iron present in given Hematite ore by KMnO4 solution
	2nd	
6th	1st	Volumetric estimation of total acid number (TAN) of given oil
	2nd	
7th	1st	Volumetric estimation of total hardness of given water sample using standard EDTA solution
	2nd	
8th	1st	Volumetric estimation of alkalinity of given water sample using 0.01M sulphuric acid
	2nd	
9th	1st	Record Check & discussion
	2nd	
10th	1st	Determine the conductivity of given water sample
	2nd	
11th	1st	Determination of viscosity of lubricating oil using Redwood viscometer
	2nd	
12th	1st	To verify the first law of electrolysis of copper sulfate using copper electrode
	2nd	

13th	1st	Construction and measurement of emf of elector chemical cell (Daniel cell)
	2nd	
14th	1st	To study the effect of dissimilar metal combination
	2nd	
15th	1st	Record Check & viva voce
	2nd	

LESSON PLAN

DISCIPLINE: MATH AND SCIENCE	SEMESTER: SECOND	NAME OF THE TEACHING FACULTIES: Shishir Kumar Naik Sankar Kumar Pradhan

SUBJECT: MATHEMATICS-II	NO. OF. DAYS PER WEEK CLASS ALLOTED	SEMESTER: 04/02/2025 to 17/05/2025	
WEEK	**CLASS DAY**	**THEORY**	
1ST	1ST	DEFINITION OF DETERMINANT ,MINOR & COFACTOR UPTO THIRD ORDER	
	2ND	CONSISTENCY OF EQUATION WITH EXAMPLE	
	3RD	CONSISTENCY RELATED EXAMPLE	
	4TH	PROPERTIES OF DETERMINANTS	
2ND	1ST	EXAMPLE RELATED PROPERTIES	
	2ND	EXAMPLE RELATED PROPERTIES	
	3RD	CRAMERS RULE,SOLVING LINEAR EQUATION BY CRAMERS RULE	
	4TH	DEFINITION AND DIFFERENT TYPES OF MATRICES WITH EXAMPLES	
3RD	1ST	ALGEBRA OF MATRICES(ADDITION,SUBTRACTION,MULTIPLICATION)	
	2ND	TRANSPOSE,ADJOINT & INVERSE OF A MATRIX	
	3RD	EXAMPLES TO FIND THE INVERSE OF A MATRIX	
	4TH	SOLVING OF LINEAR EQUATION BY MATRIX INVERSE METHOD	
4TH	1ST	DEFINITION OF INTEGRATION AS INVERSE OF DIFFERENTIATION	
	2ND	INTEGRAL OF STANDARD FUNCTIONS	
	3RD	METHODS OF INTEGRATIONS: (i)INTEGRATION BY SUBSTITUTION	
	4TH	PROBLEMS BASED ON SUBSTITUTION METHOD	
5TH	1ST	(ii) INTEGRATION BY PARTS	
	2ND	PROBLEMS BASED ON INTEGRATION BY PARTS	
	3RD	INTEGRATION BY PARTIAL FRACTION	
	4TH	DEFINITION OF DEFINITE INTEGRATION	
TH	1ST	PROPERTIES OF DEFINITE INTEGRATION	

	2ND	PROBLEM RELATED TO DEFINITE INTEGRATION
	3RD	PROBLEM RELATED TO DEFINITE INTEGRATION
	4TH	SOLVING OF PROBLEMS USING FORMULAS $$\int_0^{\frac{\pi}{2}} \sin^n x \, dx, \ \int_0^{\frac{\pi}{2}} \cos^n x \, dx$$ $$\int_0^{\frac{\pi}{2}} \sin^m x \, \cos^n x \, dx$$
7TH	1ST	EVALUATION OF SIMPLE PROBLEM OF AREA BOUNDED BY CURVE & AXIS
	2ND	CALCULATION OF VOLUME OF A SOLID FORMED BY REVOLUTION OF AN AREA ABOUT AXIS
	3RD	BRIEF IDEA ABOUT COORDINATE SYSTEM & DISTANCE FORMULA & DIVISON FORMULA WITH EXAMPLES
	4TH	EQUATION OF STRAIGHT LINE IN VARIOUS STANDARD FORMS WITH EXAMPLES
8TH	1ST	EQUATION OF STRAIGHT LINE IN VARIOUS STANDARD FORMS WITH EXAMPLES
	2ND	INTERSECTION OF TWO STRAIGHT LINES WITH EXAMPLES
	3RD	ANGLE BETWEEN TWO LINES WITH EXAMPLES
	4TH	PARALLEL & PERPENDICULAR LINES AND PERPENDICULAR DISTANCE FORMULA WITH EXAMPLES
9TH	1ST	DEFINITION & EQUATION OF A CIRCLE GIVEN CENTRE & RADIUS WITH EXAMPLES
	2ND	EQUATION OF CIRCLE WITH GIVEN END POINTS OF DIAMETER & THREE POINTS LYING ON IT WITH EXAMPLES
	3RD	DEFINITION OF CONIC SECTIONS & THEIR FOCI, DIRECTORIES,VERTICES, LATUS RECTA WITH EXAMPLES
	4TH	DEFINITION OF PARABOLA & THEIR STANDARD EQUATIONS IN DIFFERENT FORMS WITH EXAMPLES
10TH	1ST	EXAMPLES RELATED TO PARABOLA WHEN THEIR FOCI, DIRECTORIES,VERTICES, LATUS RECTA ARE GIVEN
	2ND	DEFINITION OF ELLIPSE & THEIR STANDARD EQUATIONS IN DIFFERENT FORMS WITH EXAMPLES
	3RD	EXAMPLES RELATED TO ELLIPSE WHEN THEIR FOCI, DIRECTORIES,VERTICES, LATUS RECTA ARE

		GIVEN
	4TH	DEFINITION OF HYPERBOLA & THEIR STANDARD EQUATIONS IN DIFFERENT FORMS WITH EXAMPLES
11TH	1ST	EXAMPLES RELATED TO HYPERBOLA WHEN THEIR FOCI, DIRECTORIES,VERTICES, LATUS RECTA ARE GIVEN
	2ND	DEFINITION OF VECTOR, TYPES OF VECTORS, REPRESENTATION OF A VECTOR
	3RD	MAGNITUDE AND DIRECTION OF A VECTOR.
	4TH	QUESTIONS BASED ON THIS
12TH	1ST	POSITION VECTOR, ADDITION & SUBTRACTION OF VECTORS, CONDITION OF CO-LINEARITY
	2ND	SCALAR PRODUCT OF TWO VECTORS. (DOT PRODUCT), GEOMETRICAL MEANING OF DOT PRODUCT.
	3RD	PROBLEMS BASED ON SCALAR PRODUCT
	4TH	ANGLE BETWEEN TWO VECTORS WITH EXAMPLES
13TH	1ST	SCALAR & VECTOR PROJECTION WITH EXAMPLES
	2ND	VECTOR PRODUCT OF TWO VECTORS. (CROSS PRODUCT), GEOMETRICAL MEANING OF CROSS PRODUCT
	3RD	FINDING AREA OF TRIANGLE & PARALLELOGRAM
	4TH	PROBLEMS RELATED TO WORK, MOMENT,AND ANGULAR VELOCITY
14TH	1ST	DEFINITION OF DIFFERENTIAL EQUATION WITH ORDER & DEGREE WITH EXAMPLES
	2ND	SOLUTION OF FIRST ORDER DIFFERENTIAL EQUATION BY VARIABLE SEPARATION METHOD
	3RD	SOLUTION OF FIRST ORDER DIFFERENTIAL EQUATION BY VARIABLE SEPARATION METHOD
	4TH	SOLUTION OF FIRST ORDER DIFFERENTIAL EQUATION BY VARIABLE SEPARATION METHOD
15TH	1ST	SIMPLE INTRODUCTION TO MAT LAB
	2ND	REVISION & DOUBT CLEARING CLASSES
	3RD	REVISION & DOUBT CLEARING CLASSES
	4TH	REVISION & DOUBT CLEARING CLASSES

LESSON PLAN

DISCIPLINE: MATH & SCIENCE	SEMESTER: SECOND	NAME OF THE TEACHING FACULTY: MANASWINEE PATNAIK (Lecturer) G.SUSMITA (Lecturer)

SUBJECT: APPLIED PHYSICS-II	NO. OF. CLASSES ALLOTED PER WEEK:04	**SEMESTER FROM** 04/02/2025 to 17/05/2025
WEEK	**CLASS DAY**	**THEORY**
1ST	1st	Wave motion, transverse and longitudinal waves with examples, definitions of wave velocity, frequency and wave length and their relationship
	2nd	Sound and light waves and their properties
	3rd	Wave equation (y = r sin t) amplitude, phase, phase difference
	4th	Principle of superposition of waves and beat formation
2ND	1st	Simple Harmonic Motion (SHM): definition, expression for displacement, velocity, acceleration, time period, frequency etc
	2nd	Simple harmonic progressive wave and energy transfer
	3rd	Study of vibration of cantilever and determination of its time period
	4th	Free, forced and resonant vibrations with examples
3RD	1st	Acoustics of buildings – reverberation, reverberation time, echo, noise, coefficient of absorption of sound
	2nd	Methods to control reverberation time and their applications
	3rd	Ultrasonic waves – Introduction and properties, engineering and medical applications of ultrasonic
	4th	Basic optical laws; reflection and refraction, refractive index
4TH	1st	Images and image formation by mirrors
	2nd	Images and image formation by lens and thin lenses
	3rd	Lens formula, power of lens, magnification and defects
	4th	Total internal reflection, Critical angle and conditions for total internal reflection
5TH	1st	Applications of total internal reflection in optical fiber
	2nd	Optical Instruments; simple and compound microscope
	3rd	Astronomical telescope in normal adjustment, magnifying power, resolving power
	4th	Uses of microscope and telescope, optical projection systems
6TH	1st	Coulombs law, unit of charge, Electric field, Electric lines of force and their properties
	2nd	Electric flux, Electric potential and potential difference, Gauss law

		3rd	Application of Gauss law to find electric field intensity of straight charged conductor
		4th	Application of Gauss law to find electric field intensity of plane charged sheet
7TH		1st	Application of Gauss law to find electric field intensity of charged sphere
		2nd	Capacitor and its working, Types of capacitors, Capacitance and its units
		3rd	Capacitance of a parallel plate capacitor
		4th	Series and parallel combination of capacitors (related numerical),
8TH		1st	Dielectric and its effect on capacitance, dielectric break down
		2nd	Electric Current and its units, Direct and alternating current, Resistance and its units
		3rd	Specific resistance, Conductance, Specific conductance
		4th	Series and parallel combination of resistances & Numericals
9TH		1st	Factors affecting resistance of a wire, carbon resistances and colour coding
		2nd	Ohm's law and its verification, Kirchhoff's laws
		3rd	Wheatstone bridge and its applications (slide wire bridge only)
		4th	Concept of terminal potential difference and Electromotive force (EMF), Heating effect of current
10TH		1st	Electric power, Electric energy and its units (related numerical problems)
		2nd	Advantages of Electric Energy over other forms of energy
		3rd	Types of magnetic materials; dia, para and ferromagnetic with their properties
		4th	Magnetic field and its units, magnetic intensity
11TH		1st	Magnetic lines of force, magnetic flux and units, magnetization
		2nd	Concept of electromagnetic induction, Faraday's Laws, Lorentz force (force on moving charge in magnetic field)
		3rd	Force on current carrying conductor, force on rectangular coil placed in magnetic field
		4th	Moving coil galvanometer; principle, construction and working
12TH		1st	Conversion of a galvanometer into ammeter and voltmeter
		2nd	Energy bands in solids, Types of materials (insulator, semi-conductor, conductor)
		3rd	Intrinsic and extrinsic semiconductors, p-n junction, junction diode and V-I characteristics
		4th	Types of junction diodes. Diode as rectifier - half wave and full wave rectifier (centre taped)
13TH		1st	Transistor; description and three terminals, Types- pnp and npn, some electronic applications (list only)
		2nd	Photocells, Solar cells; working principle and engineering applications
		3rd	Lasers: Energy levels, ionization and excitation potentials
		4th	Spontaneous and stimulated emission; population inversion, pumping methods, optical feedback
14TH		1st	Types of lasers; Ruby, He-Ne and semiconductor

	2nd	Laser characteristics, engineering and medical applications of lasers
	3rd	Fiber Optics: Introduction to optical fibers, light propagation
	4th	Acceptance angle and numerical aperture, fiber types
15TH	1st	Fiber applications in telecommunication, medical and sensors
	2nd	Nanoscience and Nanotechnology: Introduction, nanoparticles and nanomaterials
	3rd	Properties at nanoscale, nanotechnology
	4th	Nanotechnology based devices and applications

Lesson plan of 2024-25
(2ND SEMESTER)

DEPARTMENT: MATH & SCIENCE	SEMESTER:2ND	NAME OF THE TEACHING FACULTY: G. BALA KRUSHNA REDDY(LECTURER) SANJUKTA DAS(LECTURER)
SUBJECT: Communication Skills in English	NO.OF CLASSES ALLOTTED PER WEEK: 3	SEMESTER FROM: 04/02/2025 to 17/05/2025
WEEK	CLASS DAY	THEORY TOPICS
1st	1st	Basics of communication: Introduction, meaning
	2nd	Definition, process of communication
	3rd	Types of communication: formal and informal
2nd	1st	Verbal, non-verbal and barriers to effective communication
	2nd	7 Cs for effective communication (considerate, concrete, concise, clear, complete, correct, courteous)
	3rd	Art of Effective communication : Choosing words, Voice, Modulation
3rd	1st	Art of Effective communication : Clarity, Time, Simplification of words
	2nd	Technical Communication
	3rd	Introduction: Soft Skills and Hard Skills
4th	1st	Importance of Soft Skills
	2nd	Life Skills: Self-awareness and Self-analysis
	3rd	Applying Soft Skills across cultures
5th	1st	Class test & Previous class discussion
	2nd	Comprehension, vocabulary enhancement
	3rd	Grammar exercises based on reading
6th	1st	"An Astrologer's Day"
	2nd	"An Astrologer's Day" & Discussion
	3rd	"The Missing Mail"
7th	1st	"The Missing Mail" & Discussion
	2nd	" Doctor's Word" & Discussion
	3rd	"The Gift of the Magi" & Discussion
8th	1st	"Stopping by Woods on a Snowy Evening"
	2nd	"Stopping by Woods on a Snowy Evening& Discussion

	3rd	"Where the Mind is Without Fear"
9th	1st	Where the Mind is Without Fear"& Disussion
	2nd	Summary writing
	3rd	Report writing
10th	1st	Letters: Business
	2nd	Letters: Personal
	3rd	Drafting e-mail
11th	1st	Drafting notices
	2nd	Drafting Minutes of a Meeting
	3rd	Filling-up different forms :Banks,Reservation forms,etc
12th	1st	Filling-up different forms :On-line forms for placement
	2nd	Class Test & Discussion
	3rd	Vocabulary of commonly used words
13th	1st	Vocabulary of commonly used words & discussion
	2nd	Commonly used administrative terms
	3rd	One-word substitution
14th	1st	Parts of Speech
	2nd	Parts of Speech & discussion
	3rd	Active and Passive voice
15th	1st	Active and Passive voice & discussion
	2nd	Tenses
	3rd	Punctuation

G.BALAKRUSHNA REDDY   **SANJUKTA DAS**