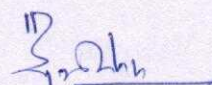


Winter 2021 Lesson Plan : Engg. Physics (TH2A)  
Winter 2021

Discipline: Civil & Mechanical	Semester: 1 <sup>st</sup> semester Winter 2021	Name of the teaching faculty: Binayak Sahu (Lect. In Physics)
Subject: Engg. Physics (Th.2a)	No. of days/week class allotted: 04	Semester from date: 25/10/2021 To date: 31/01/2022 No. of weeks: 15
Week	Class Day	Theory Topics
1 <sup>st</sup>	1 <sup>st</sup>	Unit-1: UNITS & DIMENSIONS Physical quantities, Units, types of units and system of units
	2 <sup>nd</sup> & 3 <sup>rd</sup>	Unit-1: UNITS & DIMENSIONS Dimension and dimensional formulae of physical quantities Principle of homogeneity and application of dimensional analysis: Checking the correctness of physical relations and Examples
	4 <sup>th</sup>	Unit-2: SCALARS AND VECTORS Concept of scalar and vector quantities with definition, types of vectors, Rules of vector addition: Statements of Triangle law of vector addition
2 <sup>nd</sup>	1 <sup>st</sup>	Unit-2: SCALARS AND VECTORS Parallelogram law of vector addition and simple numericals, Concept on Resolution of vectors with simple numerical on Horizontal and vertical components
	2 <sup>nd</sup>	Unit-2: SCALARS AND VECTORS Vector multiplication: Dot product and Cross Product with simple numericals on dot and cross products
	3 <sup>rd</sup> & 4 <sup>th</sup>	Unit-3: KINEMATICS Concept of Rest and Motion with examples, Fundamental ideas on distance, displacement, speed, velocity, acceleration and force, equations of motion under gravity both for upward and downward motion
3 <sup>rd</sup>	1 <sup>st</sup>	Unit-3: KINEMATICS Circular motion: Conceptual idea on circular motion and terms related to circular motion such as angular displacement, angular velocity and angular acceleration.
	2 <sup>nd</sup>	Unit-3: KINEMATICS Derivations of Relation between- (i) Linear & angular velocity, (ii) Linear & Angular acceleration
	3 <sup>rd</sup> & 4 <sup>th</sup>	Unit-3: KINEMATICS Projectile motion: Definition and examples, Expression for equation of Trajectory, Time of Flight, Maximum Height and Horizontal Range for a projectile fired at an angle, condition for maximum horizontal range with simple numericals
4 <sup>th</sup>	1 <sup>st</sup>	Unit-4: WORK AND FRICTION Definition of work, its formula and SI unit with simple numericals
	2 <sup>nd</sup>	Unit-4: WORK AND FRICTION Concept of friction with definition and simple examples, Types of friction
	3 <sup>rd</sup>	Unit-4: WORK AND FRICTION Definition with concept on limiting friction, and laws of limiting friction (statement only)

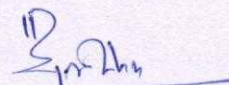
  
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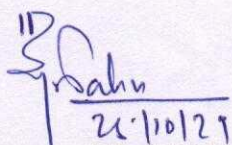
	4 <sup>th</sup>	Unit-4: WORK AND FRICTION Theory on Coefficient of Friction and simple numericals
5 <sup>th</sup>	1 <sup>st</sup>	Unit-4: WORK AND FRICTION Methods to reduce friction with practical examples
	2 <sup>nd</sup> & 3 <sup>rd</sup>	Unit-5: GRAVITATION Introduction, a detail explanation on Newton's Laws of Gravitation and definition of Universal Gravitational Constant (G) with its unit and dimensions
	4 <sup>th</sup>	Unit-5: GRAVITATION Definition and concept of acceleration due to gravity (g), Relation between 'g' and 'G' and definition of mass and weight
6 <sup>th</sup>	1 <sup>st</sup> & 2 <sup>nd</sup>	Unit-5: GRAVITATION Explanation (No derivation) on variation of 'g' with altitude and depth, statements on Kepler's Laws of Planetary motion
	3 <sup>rd</sup> & 4 <sup>th</sup>	Unit-6: OSCILLATIONS AND WAVES Definition and examples on Simple Harmonic Motion (SHM), expressions for displacement, velocity and acceleration of a body or particle in SHM
7 <sup>th</sup>	1 <sup>st</sup>	Unit-6: OSCILLATIONS AND WAVES Wave Motion (Definition & Concept), Transverse and Longitudinal wave motion (Definition, examples and Comparison)
	2 <sup>nd</sup> & 3 <sup>rd</sup>	Unit-6: OSCILLATIONS AND WAVES Wave parameters and Establish a relation between velocity, frequency and Time period, Ultrasonics-Definition, properties & Applications
	4 <sup>th</sup>	Unit-6: OSCILLATIONS AND WAVES Wave parameters and Establish a relation between velocity, frequency and Time period, Ultrasonics-Definition, properties & Applications
8 <sup>th</sup>	1 <sup>st</sup>	Unit-7: HEAT AND THERMODYNAMICS Heat & temperature-Definition and difference, Units of Heat (FPS, CGS, MKS & SI)
	2 <sup>nd</sup> & 3 <sup>rd</sup>	Unit-7: HEAT AND THERMODYNAMICS Fundamental ideas on Specific heat, Change of State and Latent Heat with simple numericals
	4 <sup>th</sup>	Unit-7: HEAT AND THERMODYNAMICS Concept on Thermal expansion and Coefficient of linear ( $\alpha$ ), superficial ( $\beta$ ) and cubical ( $\gamma$ ) expansions of Solids, Relation between $\alpha$ , $\beta$ and $\gamma$
9 <sup>th</sup>	1 <sup>st</sup> & 2 <sup>nd</sup>	Unit-7: HEAT AND THERMODYNAMICS Definition and Relation between Work and Heat, Joule's Mechanical Equivalent of Heat, Statement and explanation on 1 <sup>st</sup> law of thermodynamics
	3 <sup>rd</sup>	Unit-7: HEAT AND THERMODYNAMICS Definition and Relation between Work and Heat, Joule's Mechanical Equivalent of Heat, Statement and explanation on 1 <sup>st</sup> law of thermodynamics
	4 <sup>th</sup>	Unit-8: OPTICS Concept of Reflection and laws of Reflection, Concept of Refraction and laws of Refraction and Refractive index (Definition, formula and Simple numericals)
10 <sup>th</sup>	1 <sup>st</sup>	Unit-8: OPTICS Concept and Explanation of Total Internal Reflection and Critical angle
	2 <sup>nd</sup>	Unit-8: OPTICS Concept and Explanation of Total Internal Reflection and Critical angle
	3 <sup>rd</sup>	Unit-8: OPTICS Definition, Properties and Applications on Fiber Optics

  
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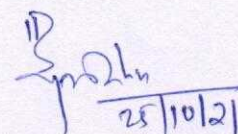
  
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	4 <sup>th</sup>	Unit-9: ELECTROSTATICS AND MAGNETOSTATICS Concept of Electric field and Electric field intensity, Statement and Explanation of Coulomb's law and definition of Unit charge, Absolute & Relative Permittivity (Definition, Relation & Unit
11 <sup>th</sup>	1 <sup>st</sup>	
	2 <sup>nd</sup> & 3 <sup>rd</sup>	Unit-9: ELECTROSTATICS AND MAGNETOSTATICS Electric potential & Electric potential difference (Definition, formula & SI units), Concept of capacitor and capacitance, Series and parallel combination of capacitors: Formula for equivalent capacitance and simple numericals
	4 <sup>th</sup>	Unit-9: ELECTROSTATICS AND MAGNETOSTATICS Fundamental idea on magnet, Coulomb's law in magnetism and definition of Unit pole
12 <sup>th</sup>	1 <sup>st</sup>	Unit-9: ELECTROSTATICS AND MAGNETOSTATICS Definition of magnetic field and Magnetic field Intensity (H) with its formula and SI unit, Magnetic lines of force- Definition and Properties
	2 <sup>nd</sup>	Unit-9: ELECTROSTATICS AND MAGNETOSTATICS Magnetic flux( $\phi$ ) and Magnetic flux density (B)
	3 <sup>rd</sup> & 4 <sup>th</sup>	Unit-10: CURRENT ELECTRICITY Introduction to Electric Current, Ohm's law and its applications
13 <sup>th</sup>	1 <sup>st</sup> & 2 <sup>nd</sup>	Unit-10: CURRENT ELECTRICITY Series and parallel combination of resistors: Formula for equivalent resistance and simple numericals
	3 <sup>rd</sup>	Unit-10: CURRENT ELECTRICITY Kirchhoff's laws: Statements & Explanation with diagram
	4 <sup>th</sup>	Unit-10: CURRENT ELECTRICITY Application of Kirchhoff's laws to Wheatstone bridge- Derivation of balance condition of Wheatstone bridge
14 <sup>th</sup>	1 <sup>st</sup> & 2 <sup>nd</sup>	Unit-11: ELECTROMAGNETISM AND ELECTROMAGNETIC INDUCTION Introduction, Force acting on a current carrying conductor placed in a uniform magnetic field, Fleming's left hand rule
	3 <sup>rd</sup> & 4 <sup>th</sup>	Unit-11: ELECTROMAGNETISM AND ELECTROMAGNETIC INDUCTION Statement on Faraday's Laws of Electromagnetic Induction & Lenz's law
15 <sup>th</sup>	1 <sup>st</sup>	Unit-11: ELECTROMAGNETISM AND ELECTROMAGNETIC INDUCTION Fleming's Right Hand Rule, Comparison between Fleming's RHR & LHR
	2 <sup>nd</sup> & 3 <sup>rd</sup>	Unit-12: MODERN PHYSICS Introduction to LASER and laser beam, its principle: Population inversion & Optical Pumping
	4 <sup>th</sup>	Unit-12: MODERN PHYSICS Concept on Wireless Transmission- Ground waves, Sky waves & Space Waves

  
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Discipline: <i>Civil &amp; mech.</i>	Semester: <i>4<sup>th</sup></i> <i>Winter 2021</i>	Name of the teaching faculty: <b>Binayak Sahu</b> (Lect. In Physics)
Subject: <b>Engg. Physics</b> <b>Lab (Pr.2a)</b>	No. of days/week class allotted: 04	Semester from date: <i>25/10/2021</i> To date: <i>31/01/2022</i> No. of weeks: <i>15</i>
Week	Class Day	Theory Topics
1 <sup>st</sup>	1 <sup>st</sup> 2 <sup>nd</sup> 3 <sup>rd</sup> & 4 <sup>th</sup>	To find volume of a solid cylinder using a Vernier Calipers
2 <sup>nd</sup>	1 <sup>st</sup> & 2 <sup>nd</sup>	To find volume of a solid cylinder using a Vernier Calipers
	3 <sup>rd</sup> & 4 <sup>th</sup>	To find volume of a hollow cylinder using a Vernier Calipers
3 <sup>rd</sup>	1 <sup>st</sup> 2 <sup>nd</sup> 3 <sup>rd</sup> & 4 <sup>th</sup>	To find volume of a hollow cylinder using a Vernier Calipers
4 <sup>th</sup>	1 <sup>st</sup> 2 <sup>nd</sup> 3 <sup>rd</sup> & 4 <sup>th</sup>	To find the cross sectional area of a wire using screw gauge
5 <sup>th</sup>	1 <sup>st</sup> & 2 <sup>nd</sup>	To find the cross sectional area of a wire using screw gauge
	3 <sup>rd</sup> & 4 <sup>th</sup>	To find the thickness and volume of a glass piece using a screw gauge
6 <sup>th</sup>	1 <sup>st</sup> 2 <sup>nd</sup> 3 <sup>rd</sup> & 4 <sup>th</sup>	To find the thickness and volume of a glass piece using a screw gauge
7 <sup>th</sup>	1 <sup>st</sup> 2 <sup>nd</sup> 3 <sup>rd</sup> & 4 <sup>th</sup>	To determine the radius of curvature of convex surface using a Spherometer
8 <sup>th</sup>	1 <sup>st</sup> & 2 <sup>nd</sup>	To determine the radius of curvature of convex surface using a Spherometer
	4 <sup>th</sup> & 3 <sup>rd</sup>	To determine the radius of curvature of concave surface using a Spherometer.
9 <sup>th</sup>	1 <sup>st</sup> 2 <sup>nd</sup> 3 <sup>rd</sup> & 4 <sup>th</sup>	To determine the radius of curvature of concave surface using a Spherometer
10 <sup>th</sup>	1 <sup>st</sup> 2 <sup>nd</sup> 3 <sup>rd</sup> & 4 <sup>th</sup>	To verify Ohm's Law by Ammeter – Voltmeter method
11 <sup>th</sup>	1 <sup>st</sup> & 2 <sup>nd</sup>	To verify Ohm's Law by Ammeter – Voltmeter method
	3 <sup>rd</sup> & 4 <sup>th</sup>	To trace lines of force due to a bar magnet with North pole pointing North and locate the neutral points
12 <sup>th</sup>	1 <sup>st</sup> 2 <sup>nd</sup> 3 <sup>rd</sup> & 4 <sup>th</sup>	To trace lines of force due to a bar magnet with North pole pointing North and locate the neutral point
13 <sup>th</sup>	1 <sup>st</sup> 2 <sup>nd</sup> 3 <sup>rd</sup> & 4 <sup>th</sup>	To trace lines of force due to a bar magnet with North pole pointing South and locate the neutral points
14 <sup>th</sup>	1 <sup>st</sup> & 2 <sup>nd</sup>	To trace lines of force due to a bar magnet with North pole pointing South and locate the neutral points
14 <sup>th</sup>	3 <sup>rd</sup> & 4 <sup>th</sup>	To find the time period of a simple pendulum and determine acceleration due to gravity
15 <sup>th</sup>	1 <sup>st</sup> 2 <sup>nd</sup> 3 <sup>rd</sup> & 4 <sup>th</sup>	To find the time period of a simple pendulum and determine acceleration due to gravity

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*B. Sahu*  
*25/10/21*



Winter 2021

Discipline: Electrical	Semester: 1 <sup>st</sup>	Name of the teaching faculty: <b>Jnyana Ranjan Mishra (Lect. In Chemistry)</b>
Subject: <b>Engg. Chemistry (Th.2b)</b>	No. of days/week class allotted: 04	Semester from date: 25/10/2021 To date: No. of weeks: 15
Week	Class Day	Theory Topics
1 <sup>st</sup> & 2 <sup>nd</sup> week	1 <sup>st</sup>	<b>Chapter 1: Atomic structure :</b> Fundamental particles ( electron, proton & neutron Definition, mass and charge )
	2 <sup>nd</sup> & 3 <sup>rd</sup>	Rutherford's Atomic model ( postulates and failure), Atomic mass and mass number, Definition, examples and properties of Isotopes, isobars and isotones
	4 <sup>th</sup>	Bohr's Atomic model ( Postulates only)
3 <sup>rd</sup> week	1 <sup>st</sup>	Bohr-Bury scheme, Aufbau's principle, Hund's rule, Electronic configuration (up to atomic no 30).
	2 <sup>nd</sup>	<b>Chapter 2 : Chemical Bonding :</b> Definition , types (Electrovalent, Covalent and Coordinate bond with examples)
	3 <sup>rd</sup> & 4 <sup>th</sup>	Formation of NaCl, MgCl <sub>2</sub> , H <sub>2</sub> , Cl <sub>2</sub> , O <sub>2</sub> , N <sub>2</sub> , H <sub>2</sub> O, CH <sub>4</sub> , NH <sub>3</sub> , NH <sub>4</sub> <sup>+</sup> , SO <sub>2</sub>
4 <sup>th</sup> week	1 <sup>st</sup>	<b>Chapter 3 : Acid base theory :</b> Concept of Arrhenius, Lowry Bronsted and Lewis theory for acid and base with examples ( Postulates and limitations only).
	2 <sup>nd</sup>	Neutralization of acid & base. Definition of Salt, Types of salts ( Normal, acidic, basic, double, complex and mixed salts, definitions with 2 examples from each).
	3 <sup>rd</sup> & 4 <sup>th</sup>	<b>Chapter 4: Solutions :</b> Definitions of atomic weight, molecular weight, Equivalent weight. Determination of equivalent weight of Acid, Base and Salt
4 <sup>th</sup>	1 <sup>st</sup>	Modes of expression of the concentrations ( Molarity , Normality & Molality) with Simple Problems. pH of solution ( definition with simple numericals )
	2 <sup>nd</sup>	Importance of pH in industry ( sugar, textile, paper industries only)
	3 <sup>rd</sup>	<b>Chapter 5 : Electrochemistry :</b> Definition and types (Strong & weak) of Electrolytes with example. Electrolysis ( Principle & process) with example of NaCl (fused and aqueous solution).)

  
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	4 <sup>th</sup>	Faraday's 1 <sup>st</sup> and 2 <sup>nd</sup> law of Electrolysis (Statement, mathematical expression and Simple numerical)
5 <sup>th</sup>	1 <sup>st</sup>	Industrial application of Electrolysis- Electroplating ( Zinc only)
	2 <sup>nd</sup> & 3 <sup>rd</sup>	<b>Chapter 6 : Corrosion:</b> Definition of Corrosion, Types of Corrosion- Atmospheric Corrosion, Waterline corrosion.
	4 <sup>th</sup>	Mechanism of rusting of Iron only
6 <sup>th</sup>	1 <sup>st</sup> & 2 <sup>nd</sup>	Protection from Corrosion by (i) Alloying and (ii) Galvanization.
	3 <sup>rd</sup> & 4 <sup>th</sup>	<b>Chapter 7 : Metallurgy:</b> Definition of Mineral, ores , gangue with example. Distinction between Ores And Minerals.
7 <sup>th</sup>	1 <sup>st</sup>	General methods of extraction of metals, i) Ore Dressing ii) Concentration ( Gravity separation, magnetic separation, Froth floatation & leaching)
	2 <sup>nd</sup> & 3 <sup>rd</sup>	iii) Oxidation (Calcinations, Roasting ) iv) Reduction (Smelting, Definition & examples of flux, slag) v) Refining of the metal ( Electro refining, & Distillation only)
	4 <sup>th</sup>	<b>Chapter 8 : Alloys:</b> Definition of alloy. Types of alloys (Ferro, Non Ferro & Amalgam) with example
8 <sup>th</sup>	1 <sup>st</sup>	Composition and uses of Brass, Bronze, Alnico, Duralumin
	2 <sup>nd</sup> & 3 <sup>rd</sup>	<b>Chapter 9 : Hydrocarbons :</b> Saturated and Unsaturated Hydrocarbons ( Definition with example) Aliphatic and Aromatic Hydrocarbons ( Huckle's rule only). Difference between Aliphatic and aromatic hydrocarbons
	4 <sup>th</sup>	IUPAC system of nomenclature of Alkane, Alkene, Alkyne, alkyl halide and alcohol ( up to 6 carbons ) with bond line notation.
9 <sup>th</sup>	1 <sup>st</sup> & 2 <sup>nd</sup>	
	3 <sup>rd</sup>	Uses of some common aromatic compounds ( Benzene, Toluene, BHC, Phenol, Naphthalene, Anthracene and Benzoic acid) in daily life.
	4 <sup>th</sup>	<b>Chapter 10 : Water Treatment :</b> Sources of water, Soft water, Hard water, hardness
10 <sup>th</sup>	1 <sup>st</sup>	
	2 <sup>nd</sup>	Types of Hardness (temporary or carbonate and permanent or non-carbonate)
	3 <sup>rd</sup>	Removal of hardness by lime soda method ( hot lime & cold lime—Principle, process & advantages )
	4 <sup>th</sup>	Advantages of Hot lime over cold lime process. Organic Ion exchange method ( principle, process, and

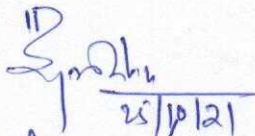
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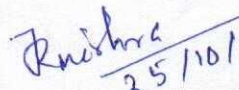
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11 <sup>th</sup>	1 <sup>st</sup>	regeneration of exhausted resins)
	2 <sup>nd</sup> & 3 <sup>rd</sup>	<b>Chapter 11 : Lubricants:</b> Definition of lubricant, Types ( solid, liquid and semisolid with examples only )
	4 <sup>th</sup>	Specific uses of lubricants ( Graphite, Oils, Grease), Purpose of lubrication
12 <sup>th</sup>	1 <sup>st</sup>	<b>Chapter 12 : Fuel:</b> Definition and classification of fuel, Definition of calorific value of fuel, Choice of good fuel.
	2 <sup>nd</sup>	Liquid: Diesel, Petrol, and Kerosene --- Composition and uses.
	3 <sup>rd</sup> & 4 <sup>th</sup>	Gaseous: Producer gas and Water gas (Composition and uses). Elementary idea about LPG, CNG and coal gas (Composition and uses only).
13 <sup>th</sup>	1 <sup>st</sup> & 2 <sup>nd</sup>	<b>Chapter 13 : Polymer:</b> Definition of Monomer, Polymer, Homo-polymer, Co-polymer and Degree of polymerization.
	3 <sup>rd</sup>	Difference between Thermosetting and Thermoplastic
	4 <sup>th</sup>	Composition and uses of Polythene, & Poly-Vinyl Chloride and Bakelite.
14 <sup>th</sup>	1 <sup>st</sup> & 2 <sup>nd</sup>	Definition of Elastomer ( Rubber). Natural Rubber (it's draw backs ). Vulcanisation of Rubber.
	3 <sup>rd</sup> & 4 <sup>th</sup>	Advantages of Vulcanised rubber over raw rubber
15 <sup>th</sup>	1 <sup>st</sup>	<b>Chapter 14: Chemicals in Agriculture:</b> Pesticides: Insecticides, herbicides, fungicides-Examples and uses.
	2 <sup>nd</sup> & 3 <sup>rd</sup>	Bio Fertilizers: Definition, examples and uses
	4 <sup>th</sup>	Important Question answer discussion

  
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**GOVT. POLYTECHNIC, KALAHANDI**  
**LESSON PLAN (ENGG. MATHEMATICS I)**

Discipline: All	Semester: 1 <sup>st</sup>	Name of the teaching faculty: Manas Kumar Mahalik
Subject: Engg. Mathematics I(Th-3)	No. of days/week class allotted: 6	Semester from date 25/10/2021 To date: 31/01/2022 No. of weeks: 15
Week	Class Day	Theory Topics
1 <sup>st</sup>	1 <sup>st</sup>	<b>1: Matrices and Determinants:</b> Definition of a matrix, Element of a matrix, Row and column of matrix with examples, Types of matrices: Row matrix, Column matrix, Rectangular matrix, Square matrix, Null matrix or zero matrix with examples.
	2 <sup>nd</sup>	Types of matrices (continues): Diagonal matrix, Scalar matrix, Unit matrix or Identity matrix, Singular matrix, Regular matrix, Equality of two matrices with examples.
	3 <sup>rd</sup>	Transpose of a matrix with example, Algebra of matrices: Addition and subtraction of matrices with examples.
	4 <sup>th</sup>	Properties of matrix addition with example
	5 <sup>th</sup>	Multiplication of matrices by a scalar: Definition and properties with examples
	6 <sup>th</sup> (Tutorial class)	Solving problems on matrix addition, subtraction and multiplication of matrices by a scalar
2 <sup>nd</sup>	1 <sup>st</sup>	<b>Matrix multiplication:</b> Definition, prefactor, postfactor with examples
	2 <sup>nd</sup>	<b>Matrix multiplication</b> (continues): some more examples on matrix multiplication, Properties of matrix multiplication with examples
	3 <sup>rd</sup>	Determinants: Definition, Minors and cofactors, Expansion of Determinant of second and third order with examples
	4 <sup>th</sup>	Properties of determinants with examples
	5 <sup>th</sup>	Properties of determinants with examples (continues)
	6 <sup>th</sup> (Tutorial class)	Solving problems on minor, cofactor and evaluation of determinants without expanding.
3 <sup>rd</sup>	1 <sup>st</sup>	Cramer's Rule: Theory, Solving linear simultaneous equations by Cramer's rule (emphasis on two variables)
	2 <sup>nd</sup>	Solving some more linear simultaneous equations by Cramer's rule
	3 <sup>rd</sup>	Adjoint of a matrix: Definition and examples, Inverse of a matrix: Definition and examples (second and third order)
	4 <sup>th</sup>	Some more Examples on Inverse of a matrix
	5 <sup>th</sup>	Solution of simultaneous equations by inverse matrix method: Theory and example
	6 <sup>th</sup> (Tutorial class)	Solving problems on inverse of matrix, adjoint of a matrix
4 <sup>th</sup>	1 <sup>st</sup>	Solution of simultaneous equations by inverse matrix method: solving some more problems of two variables
	2 <sup>nd</sup>	Solving some important problems on determinant
	3 <sup>rd</sup>	Solving some important problems on Cramer's rule.
	4 <sup>th</sup>	<b>2. Trigonometry:</b> (Trigonometric functions and their signs, domains and ranges): trigonometric ratios and common angle

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ENGG. MATHEMATICS I



**GOVT. POLYTECHNIC, KALAHANDI**  
**LESSON PLAN (ENGG. MATHEMATICS I)**

		measures
	5 <sup>th</sup>	ASTC rule, domains and ranges of trigonometric functions
	6 <sup>th</sup> (Tutorial class)	Discussion on ASTC rule and trigonometric ratios
5 <sup>th</sup>	1 <sup>st</sup>	Fundamental trigonometric identities, even and odd trigonometric functions
	2 <sup>nd</sup>	Compound angles: addition theorem( $\sin(\alpha + \beta)$ , $\cos(\alpha + \beta)$ , $\tan(\alpha + \beta)$ , $\tan(\alpha + \beta + \gamma)$ ) and deductions
	3 <sup>rd</sup>	Multiple and sub multiple arguments with examples
	4 <sup>th</sup>	Problems on Multiple and sub multiple arguments
	5 <sup>th</sup>	Writing trigonometric ratios in acute angles
	6 <sup>th</sup> (Tutorial class)	Problem discussion on compound angles and trigonometric ratios
6 <sup>th</sup>	1 <sup>st</sup>	Periodicity of trigonometric functions, maximum value of trigonometric expressions
	2 <sup>nd</sup>	Inverse trigonometric functions: definition and graphs
	3 <sup>rd</sup>	Useful formulae of inverse trigonometric functions
	4 <sup>th</sup>	Simple identities of inverse trigonometric functions
	5 <sup>th</sup>	Solving problems using inverse trigonometric identities
	6 <sup>th</sup> (Tutorial class)	Revision of inverse trigonometric functions
7 <sup>th</sup>	1 <sup>st</sup>	<b>3. Coordinate geometry in two dimensions:</b> Geometry in two dimensions: introduction, coordinate plane and axes, fundamental concepts
	2 <sup>nd</sup>	Internal division and external division of straight lines, internal division formula and external division formula and solving related problems
	3 <sup>rd</sup>	Distance formula with example, area of a triangle formula and problem solving
	4 <sup>th</sup>	<b>Slope:</b> Definition, slope of a line joining two distinct points(non vertical line) properties
	5 <sup>th</sup>	Condition of perpendicularity and parallelism with examples
	6 <sup>th</sup> (Tutorial class)	Problems on distance formula, division formula and slope
8 <sup>th</sup>	1 <sup>st</sup>	Locus and its equation: definition, equation of a straight line: slope intercept form, slope point form with examples
	2 <sup>nd</sup>	Equation of a straight line in: two point form, intercept form with examples
	3 <sup>rd</sup>	Equation of a straight line in: perpendicular form, general form of a straight line and deduction into different forms
	4 <sup>th</sup>	Solving problems on different forms of straight line
	5 <sup>th</sup>	Case of parallel lines: equation of a line passing through a point and parallel to a line
	6 <sup>th</sup> (Tutorial class)	Problems on case of parallel lines
9 <sup>th</sup>	1 <sup>st</sup>	Case of perpendicular lines: equation of a line passing through a point and perpendicular to a line with example
	2 <sup>nd</sup>	Point of intersection of two lines, family of lines
	3 <sup>rd</sup>	Equation of a line passing through the intersection of two lines with examples
	4 <sup>th</sup>	Distance of a point from a line and related problem solving
	5 <sup>th</sup>	Revision of straight lines



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	6 <sup>th</sup> (Tutorial class)	Problem solving from family of straight lines
10 <sup>th</sup>	1 <sup>st</sup>	<b>4. Circle:</b> Definition of a circle, Equation of circle with given centre and radius with example
	2 <sup>nd</sup>	Problems on equation of circle in centre radius form if the circle touches X-axis, Y-axis or both the axes with examples
	3 <sup>rd</sup>	Equation of a circle in end point of diameter form with examples
	4 <sup>th</sup>	General equation of a circle
	5 <sup>th</sup>	Determining centre and radius of a circle from general form
11 <sup>th</sup>	6 <sup>th</sup> (Tutorial class)	Solving Problems on circle
	1 <sup>st</sup>	Revision of circle problems
	2 <sup>nd</sup>	<b>5. Coordinate geometry in three dimensions:</b> Brief idea of three dimensional coordinate system, Distance formula with examples, section formulae with examples.
	3 <sup>rd</sup>	Solving problems on section formula, direction cosine and direction ratio with examples.
	4 <sup>th</sup>	Finding dcs from drs with examples
	5 <sup>th</sup>	Angle between two lines, condition of perpendicularity and condition of parallelism.
	6 <sup>th</sup> (Tutorial class)	Problem solving on Angle between two lines, condition of perpendicularity and condition of parallelism.
12 <sup>th</sup>	1 <sup>st</sup>	Equation of a plane: General equation of a plane, Equation of a plane passing through a point and having dcs normal to the plane with examples.
	2 <sup>nd</sup>	Angle between two planes with examples
	3 <sup>rd</sup>	Condition of parallelism and condition of perpendicularity of two planes with examples.
	4 <sup>th</sup>	Perpendicular distance of a point from a plane with examples
	5 <sup>th</sup>	Equation of a plane passing through a point and parallel to a plane with examples
	6 <sup>th</sup> (Tutorial class)	Problem solving on plane
13 <sup>th</sup>	1 <sup>st</sup>	Equation of a plane passing through a point and perpendicular to a plane with examples
	2 <sup>nd</sup>	Revision : on topic plane
	3 <sup>rd</sup>	<b>6. SPHERE:</b> Definition, equation of a sphere in centre radius form and general form with examples
	4 <sup>th</sup>	Equation of a sphere in end point of diameter form with examples
	5 <sup>th</sup>	Solving problems on sphere
14 <sup>th</sup>	6 <sup>th</sup> (Tutorial class)	Determining centre and radius of a circle from general form
	1 <sup>st</sup>	Revision:chapter 1
	2 <sup>nd</sup>	Revision:chapter 2
	3 <sup>rd</sup>	Revision:chapter 3
	4 <sup>th</sup>	Revision:chapter 4
	5 <sup>th</sup>	Revision:chapter 5
	6 <sup>th</sup> (Tutorial class)	Revision:chapter 6
15 <sup>th</sup>	1 <sup>st</sup>	Discussion of problems of previous year question paper
	2 <sup>nd</sup>	Discussion of important questions of 2 marks



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	3 <sup>rd</sup>	Discussion of important questions of 5 marks
	4 <sup>th</sup>	Discussion of important questions of 10 marks
	5 <sup>th</sup>	Discussion of important questions of 2 marks
	6 <sup>th</sup> (Tutorial class)	Discussion of important questions of 5 marks

*Tahath*  
22/10/2021  
Signature of subject Lecturer

*Dr. R. K. S. S.*  
22/10/21  
Signature of HOD, Math & Sc.

*Amol*  
Principal  
Govt. Polytechnic  
Kalahandi



# LESSON PLAN

Discipline: <b>CIVIL &amp; MECHANICAL ENGINEERING</b>	Semester: <b>FIRST WINTER-2021</b>	Name of the Teaching Faculty: <b>SRI HIRENDRA KUMBHAR</b>
Subject: <b>COMMUNICATIVE ENGLISH</b>	No. Of Day / per week: 4 class allotted.	Semester From date : <b>25/10/2021</b> To Date: <b>31/01/22</b> No of weeks: 15 weeks
<b>WEEK</b>	<b>CLASS DAY</b>	<b>THEORY/PRACTICAL TOPICS</b>
1st	1st	Reading Comprehension
	2nd	Reading Comprehension
	3rd	Reading Comprehension
	4th	Reading Comprehension
2nd	1st	Reading Comprehension
	2nd	Standing up for yourself
	3rd	Standing up for yourself
	4th	Standing up for yourself
3rd	1st	Standing up for yourself
	2nd	Standing up for yourself
	3rd	Notice Writing
	4th	Notice Writing
4th	1st	Agenda Writing
	2nd	Agenda Writing
	3rd	Use of Synonyms
	4th	Use of Antonyms
5th	1st	Same word used in different situations in different meaning
	2nd	Same word used in different situations in different meaning
	3rd	Single word Substitute
	4th	The Magic of Teamwork
6th	1st	The Magic of Teamwork
	2nd	The Magic of Teamwork
	3rd	The Magic of Teamwork
	4th	The Magic of Teamwork
7th	1st	To My True Friend
	2nd	To My True Friend
	3rd	The Inchcape Rock
	4th	The Inchcape Rock
8th	1st	The Inchcape Rock
	2nd	Countable and Uncountable Noun
	3rd	Articles and Determiners
	4th	Modal Verbs
9th	1st	Tenses
	2nd	Tenses
	3rd	Voice-change
	4th	Voice-change
10th	1st	Subject-verb Agreement
	2nd	Paragraph Writing
	3rd	Paragraph Writing
	4th	Report Writing
11th	1st	Report Writing
	2nd	Writing Personal Letter

  
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	3rd	Letter to Principal, Librarian, Head of the Department and Hostel Superintendent
	4th	Writing Business Letters ( letter of enquiry, placing an order, execution of an order, cancellation, complaint letter)
12th	1st	Writing Business Letters ( letter of enquiry, placing an order, execution of an order, cancellation, complaint letter)
	2nd	Writing Business Letters ( letter of enquiry, placing an order, execution of an order, cancellation, complaint letter)
	3rd	Job Application and C.V. Writing
	4th	Job Application and C.V. Writing
13th	1st	Introduction to Communication
	2nd	Good Communication and Bad Communication
	3rd	Communication Models
	4th	Process of Communication and factors responsible for it
14th	1st	Meaning of professional communication and its types
	2nd	Formal Communication ( Upward, Downward and Parallel
	3rd	Formal Communication ( Upward, Downward and Parallel
	4th	Informal Communication ( Grape vine Communication )
15th	1st	Kinesics or Body Language ( Postures, Gestures, Facial Expression and Eye contact )
	2nd	Kinesics or Body Language ( Postures, Gestures, Facial Expression and Eye contact )
	3rd	Proxemics or Spatial Language ( Private space, Personal space, Social space and Public space )
	4th	Language of Signs and Symbols( Audio signs and Visual signs in everyday life with merits and demerits)

*Hirendra Kumbar*  
*Lect. in English*  
Name of the Faculty with Designation

*Amol*  
Principal  
Govt. Polytechnic  
Kalahandi



**LESSON PLAN**  
**SUB-COMPUTER APPLICATION**

<b>Discipline:</b> <b>Electrical</b>	<b>Semester: 1<sup>st</sup></b>	<b>Name of the Teaching Faculty:</b> Mrs. Manik Manjari Khatua
Subject:- Computer Application	No of Days/ per week class allotted:-	Semester :- 1 <sup>st</sup> Sem. Winter 2021 No of weeks:- 15 (25/10/2021 to 31/01/2022 )
<b>Week</b>	<b>Class day</b>	<b>Theory Topics</b>
1 <sup>st</sup>	1 <sup>st</sup>	Introduction to computer, Evolution of computer
	2 <sup>nd</sup>	Generation of computer, Classification of computer
	3 <sup>rd</sup>	Classification of computer, Basic Organisation of Computer(Functional Block diagram)
	4 <sup>th</sup>	Input Devices ,CPU, Output Devices
2 <sup>nd</sup>	1 <sup>st</sup>	Computer Memory and Classification of Memory
	2 <sup>nd</sup>	Software concept, System software, Application software, Overview of Operating System Objective and Functions of O.S
	3 <sup>rd</sup>	Types of Operating System: Batch Processing, Multiprogramming, Timesharing O S
	4 <sup>th</sup>	Feature of DOS , Windows and LINUX
3 <sup>rd</sup>	1 <sup>st</sup>	Programming Languages, Compiler, Interpreter, Computer Virus
	2 <sup>nd</sup>	Different Types of computer virus
	3 <sup>rd</sup>	Detection and Prevention of virus
	4 <sup>th</sup>	Application of Computers in different Domain
4 <sup>th</sup>	1 <sup>st</sup>	Networking concept, Protocol,
	2 <sup>nd</sup>	Connecting Media ,Data Transmission mode
	3 <sup>rd</sup>	Network Topologies
	4 <sup>th</sup>	Types of Network
5 <sup>th</sup>	1 <sup>st</sup>	Networking Devices like Hub, Repeater, Switch, Bridge
	2 <sup>nd</sup>	Router, Gateway & NIC
	3 <sup>rd</sup>	Internet Services Like E-Mail, WWW, FTP, Chatting, Internet Conferencing
	4 <sup>th</sup>	Different types of Internet connectivity and ISP
6 <sup>th</sup>	1 <sup>st</sup>	Concept of File and Folder, File access and Storage Methods: Sequential
	2 <sup>nd</sup>	Direct , ISAM
	3 <sup>rd</sup>	Data Capture, Data storage
	4 <sup>th</sup>	Data processing
7 <sup>th</sup>	1 <sup>st</sup>	Data Retrieval
	2 <sup>nd</sup>	Algorithm, Pseudo code and Flow chart generation of programming Languages
	3 <sup>rd</sup>	Structured Programming Languages
	4 <sup>th</sup>	Examples of Problem solving through Flowchart

  
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Week	Class day	Theory Topics
8 <sup>th</sup>	1 <sup>st</sup>	Examples of Problem solving through Flowchart
	2 <sup>nd</sup>	Examples of Problem solving through Flowchart
	3 <sup>rd</sup>	Constants, Variables and Data types in C, Managing Input and Output operations
	4 <sup>th</sup>	Operators, Expressions, Type conversion & Typecasting
9 <sup>th</sup>	1 <sup>st</sup>	Decision Control and Looping Statements(if, if-else, switch, while)
	2 <sup>nd</sup>	do-while, for, Break ,Continue & goto
	3 <sup>rd</sup>	Programming Assignments Using above features
	4 <sup>th</sup>	Programming Assignments Using above features
10 <sup>th</sup>	1 <sup>st</sup>	Programming Assignments Using above features
	2 <sup>nd</sup>	Programming Assignments Using above features
	3 <sup>rd</sup>	Programming Assignments Using above features
	4 <sup>th</sup>	Programming Assignments Using above features
11 <sup>th</sup>	1 <sup>st</sup>	Programming Assignments Using above features
	2 <sup>nd</sup>	Programming Assignments Using above features
	3 <sup>rd</sup>	Programming Assignments Using above features
	4 <sup>th</sup>	Programming Assignments Using above features
12 <sup>th</sup>	1 <sup>st</sup>	Programming Assignments Using above features
	2 <sup>nd</sup>	Functions and Passing Parameters to the Function(Call by value and call by Reference)
	3 <sup>rd</sup>	Scope of Variables and Storage Classes
	4 <sup>th</sup>	Recursion Function and Types of Recursion
13 <sup>th</sup>	1 <sup>st</sup>	One Dimensional Array and Multidimensional Array
	2 <sup>nd</sup>	String operations and Pointers
	3 <sup>rd</sup>	Pointer Expression and Pointer Arithmetic
	4 <sup>th</sup>	Programming Assignments using the above Features
14 <sup>th</sup>	1 <sup>st</sup>	Programming Assignments using the above Features
	2 <sup>nd</sup>	Programming Assignments using the above Features
	3 <sup>rd</sup>	Programming Assignments using the above Features
	4 <sup>th</sup>	Programming Assignments using the above Features
15 <sup>th</sup>	1 <sup>st</sup>	Programming Assignments using the above Features
	2 <sup>nd</sup>	Programming Assignments using the above Features
	3 <sup>rd</sup>	Programming Assignments using the above Features
	4 <sup>th</sup>	Structure and Union

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