



DEPARTMENT OF MATHEMATICS AND SCIENCE
ORISSA SCHOOL OF MINING ENGINEERING, KEONJHAR
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LESSON PLAN

Subject: ENGINEERING PHYSICS			
Discipline: METALLUGY, CIVIL, MECHANICAL		Name of the Faculty: Lambodar Mahanta	
CourseCode:	Th-2(a)	Semester:	2nd Summer 2022
TotalPeriods:	60	Semester form date:	14.03.2022
No Of Days /Week class Allotted:	<u>4/week</u>	No. of weeks	15

WEEK	CLASS DAY	THEORY TOPICS TO BE COVERED	REMARKS
1 st	1 st	Physical quantities - (Definition). Definition of fundamental and derived units, systems of units (FPS, CGS, MKS and SI units)	
	2 nd	Definition of dimension and Dimensional formulae of physical quantities. Dimensional equations and Principle of homogeneity. Checking the dimensional correctness of Physical relations.	
	3 rd	Revision & Doubt clearing class of –chapter-1	
	4 th	Scalar and Vector quantities (definition and concept), Representation of a Vector - examples, types of vectors. Triangle and Parallelogram law of vector Addition (Statement only). Simple Numericals	
1 st	1 st	Resolution of Vectors - Simple Numericals on Horizontal and Vertical components. 2.4 Vector multiplication (scalar product and vector product of vectors).	
	2 nd	Revision & Doubt clearing class of –chapter-2	
	3 rd	Concept of Rest and Motion. Displacement, Speed, Velocity, Acceleration & FORCE (Definition, formula, dimension & SI units).	
	4 th	Equations of Motion under Gravity (upward and downward motion) - no derivation. Circular motion: Angular displacement, Angular velocity and Angular acceleration (definition, formula & SI units).	
2 nd	1 st	Relation between -(i) Linear & Angular velocity, (ii) Linear & Angular acceleration).	

		Define Projectile, Examples of Projectile.	
	2 nd	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.	
	3 rd	Revision & Doubt clearing class of –chapter-3 Class test	
	4 th	Work - Definition, Formula & SI units. Friction – Definition & Concept.	
3 rd	1 st	Types of friction (static, dynamic), Limiting Friction (Definition with Concept). Laws of Limiting Friction (Only statement, No Experimental Verification).	
	2 nd	Coefficient of Friction – Definition & Formula, Simple Numericals.	
	3 rd	Methods to reduce friction.	
	4 th	Revision & Doubt clearing of chapter-4 Class Test	
4 th	1 st	Newton's Laws of Gravitation - Statement and Explanation. Universal Gravitational Constant (G) - Definition, Unit and Dimension.	
	2 nd	Acceleration due to gravity (g) - Definition and Concept. Definition of mass and weight.	
	3 rd	Relation between g and G. Variation of g with altitude and depth (No derivation – Only Explanation).	
	4 th	Kepler's Laws of Planetary Motion (Statement only).	
1 st	1 st	Revision & Doubt clearing of chapter-5 Class Test	
	2 nd	Internal	
	3 rd	Simple Harmonic Motion (SHM) - Definition & Examples. Expression (Formula/Equation) for displacement, velocity, acceleration of a body/ particle in SHM.	
	4 th	Wave motion - Definition & Concept. Transverse and Longitudinal wave motion – Definition, Examples & Comparison.	
2 nd	1 st	Definition of different wave parameters (Amplitude, Wavelength, Frequency, Time Period).	
	2 nd	Derivation of Relation between Velocity, Frequency and Wavelength of a wave	
	3 rd	Ultrasonics – Definition, Properties & Applications.	
	4 th	Revision & Doubt Clearing of Chapter-6	
3 rd	1 st	Heat and Temperature - Definition & Difference Units of Heat (FPS, CGS, MKS & SI).	
	2 nd	Specific Heat (concept, definition, unit, dimension and simple numerical) Change of state (concept), Latent Heat (concept, definition, unit, dimension and simple numerical)	
	3 rd	Thermal Expansion - Definition & Concept Expansion of Solids (Concept) Coefficient of linear, superficial and cubical expansions of	

		Solids – Definition & Units.	
	4 th	Relation between α , β & γ Work and Heat - Concept & Relation.	
4th	1 st	Joule's Mechanical Equivalent of Heat (Definition, Unit) First Law of Thermodynamics (Statement and concept only)	
	2 nd	Revision & Doubt Clearing –chapter-7 Class Test	
	3 rd	Reflection & Refraction - Definition. Laws of reflection and refraction (Statement only)	
1st	1 st	Decision Control and Looping Statements (If, If-else, If-else-if, Switch, While, Do-while, For, Break, Continue & Goto)	
	2 nd	Refractive index - Definition, Formula & Simple numerical. Critical Angle and Total internal reflection – Concept, Definition & Explanation	
	3 rd	Refraction through Prism (Ray Diagram & Formula only – NO derivation).. Fiber Optics - Definition, Properties & Applications.	
2nd	1 st	Revision & Doubt Clearing –chapter-8 Class Test	
	2 nd	Electrostatics - Definition & Concept. Statement & Explanation of Coulomb's laws, Definition of Unit charge.	
	3 rd	Absolute & Relative Permittivity (ϵ) - Definition, Relation & Unit. Electric potential and Electric Potential difference (Definition, Formula & SI Units).	
	4 th	Electric field, Electric field intensity (E) - Definition, Formula & Unit. Capacitance - Definition, Formula & Unit.	
3rd	1 st	Series and Parallel combination of Capacitors (No derivation, Formula for effective/Combined/total capacitance & Simple numericals). Magnet, Properties of a magnet.	
	2 nd	Coulomb's Laws in Magnetism - Statement & Explanation, Unit Pole (Definition). Magnetic field, Magnetic Field intensity (H) -(Definition, Formula & SI Unit).	
	3 rd	Magnetic lines of force (Definition and Properties) Magnetic Flux (Φ) & Magnetic Flux Density (B) –Definition, Formula & Unit.	
	4 th	Revision & Doubt Clearing Class-chapter-9 Class Test	
4th	1 st	Electric Current - Definition, Formula & SI Units. Ohm's law and its applications.	
	2 nd	Series and Parallel combination of resistors (No derivation, Formula for effective/ Combined/ total resistance & Simple numericals). Kirchhoff's laws (Statement & Explanation with diagram).	

	3 rd	Application of Kirchhoff's laws to Wheatstone bridge - Balanced condition of Wheatstone's Bridge -Condition of Balance (Equation).	
	4 th	Revision & Doubt Clearing Class-chapter-10 Class Test	
5th	1 st	Faraday's Laws of Electromagnetic Induction(Statement only) Lenz's Law (Statement)	
	2 nd	Fleming's Right Hand Rule Comparison between Fleming's Right Hand Rule and Fleming's Left Hand Rule.	
	3 rd	Revision & Doubt Clearing Class-chapter-11 Class Test	
	4 th	LASER & laser beam (Concept and Definition) Principle of LASER (Population Inversion & Optical Pumping)	
	EXTRA CLASS	Properties & Applications of LASER Wireless Transmission - Ground Waves, Sky Waves, Space Waves (Concept & Definition)	
	EXTRA CLASS	Revision & Doubt Clearing Class-chapter-12 Class Test	
	EXTRA CLASS	Previous year questions discussion	
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Lambodar Mahanta
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