



Bhubanananda Orissa School of Engineering, Cuttack
Department of Mathematics and Science

LESSON PLANNING
Academic Session: 2023-24 (winter)

Semester: 1st SEM

Branch: Civil Sec: B

Subject: Engineering Physics

Prepared by: ABHIPSA MOHANTY

Bijayini Nayak
18/08/2023
H.O.D. (Maths & Sci)

Discipline: CIVIL Branch	Semester: 1st Semester	Name of the Teaching Faculty: Abhipsa Mohanty
Subject: Engineering Physics	No. of Days/ per week class allotted: 04 periods/per week (Wed,Thu,Fri,Sat):- (4periods each)	Semester From: - Date: 16/08/2023 to 11/12/23 No of Weeks: - 17
Week	Class Dates	Theory Topics
1st	16.08.23	Introduction, Syllabus discussion and previous years related study discussion
	17.08.2023	UNIT 1- UNIT AND DIMENSIONS 1.1 Physical quantities (Definition)
	18.08.23	1.2 Definition of fundamental and derived units, system of units (FPS, CGS, MKS and SI units)
	19.08.23	1.3 Definition of dimensions and Dimensional Formulae of physical quantities
2nd	23.08.23	1.4 Dimensional equations and principle of homogeneity 1.5 Checking the dimensional correctness of Physical relations.
	24.08.23	UNIT-2 SCALARS AND VECTORS 2.1 Scalar and Vector quantities (definition and concept), Representation of a Vector – examples, types of vectors
	25.08.23	2.2 Triangle and Parallelogram law of vector Addition (Statement only). Simple Numerical. 2.3 Resolution of Vectors – Simple Numerical on Horizontal and Vertical components
	26.08.23	2.4 Vector multiplication (scalar product and vector product of vectors) CLASS TEST – 01

3rd	31.08.23	UNIT-03 KINEMATICS 3.1 Concept of rest and Motion 3.2 Displacement, Speed, Velocity, Acceleration and Force (Definition, formula, dimensions and SI units)
	01.09.23	3.3 Equation of Motion under Gravity (upward and downward motion) 3.4 Circular motion: Angular displacement, Angular velocity and Angular acceleration (definition, formula and SI units)
	02.09.23	3.5 Relation between - (i) Linear and Angular Velocity, (ii) Linear and Angular acceleration 3.6 Define Projectile, Examples of Projectile 3.7 Expression for Equation of Trajectory. Time of flight, Maximum Height and Horizontal Range for a projectile field at an angle, condition for maximum Horizontal Range.
	07.09.23	CLASS TEST-02
4th	08.09.23	UNIT 4 – WORK AND FRICTION 4.1 Work – Definition, Formula & SI units. 4.2 Friction – Definition & Concept
	09.09.23	4.3 Types of friction (static, dynamic), Limiting Friction (Definition with Concept) 4.4 Laws of Limiting Friction (Only statement, No Experimental Verification).
	13.09.23	4.5 Coefficient of Friction – Definition & Formula, Simple Numerical 4.6 Methods to reduce friction
	14.09.23	Unit 4 discussion
5th	15.09.23	CLASS TEST – 03
	16.09.23	UNIT -5 GRAVITATION 5.1 Newton's Laws of Gravitation -statement and explanation 5.2 Universal Gravitation Constant (G)-Definition unit and Dimensions
	21.09.23	5.3 Acceleration due to gravity (g)- Definition and Concept 5.4 Definition of mass and weight
6th		

		5.5 Relation between g and G 5.6 Variation of g with altitude and depth (No derivation - Only formula)
	22.09.23	5.7 Keplers Laws of Planetary Motion(statement only) CLASS TEST-04
	23.09.23	UNIT-6 OSCILLATION AND WAVES 6.1 Simple Harmonic Motion (SHM)-Definition and Examples 6.2 Expression (Formula/Equation) for displacement, velocity, acceleration of a body /particle in SHM
7th	27.09.23	6.3 Wave motion- Definition and Concept 6.4 Transverse and Longitudinal wave motion -Definition, Examples and Comparison.
	28.09.23	6.5 Definition of Different Wave Parameters (Amplitude, Wavelength, Frequency, Time Period) 6.6 Derivation of Relation between Velocity, Frequency and Wavelength of a Wave 6.7 Ultrasonics- Definition , Properties , Application
	30.09.23	CLASS TEST -05
8th	04.10.23	UNIT -07 HEAT AND THERMODYNAMICS 7.1 Heat and Temperature -Definition and Difference
	05.10.23	7.2 Units of Heat (FPS,CGS,MKS, and SI) 7.3 Specific Heat(Concept, definition,unit, dimensions and simple numerical)
	06.10.23	7.4 Change of State (concept),Latent Heat(concept, definition,unit, dimension and simple numerical)

		7.5 Thermal Expansion - Definition and Concept 7.6 Expansion of Solids(concept)
	07.10.23	7.7 Coefficient of linear, superficial and cubical expansion of solids-Definition and Units 7.8 Relation between Alpha,.....
9th	11.10.23	7.9 Work and heat- concept and relation
	12.10.23	7.10 Joule's mechanical equivalent of heat (definition,Unit) 7.11 First law of thermodynamics(statement and concept only)
	13.10.23	UNIT 8- OPTICS 8.1 Reflection and Refraction (Definition) 8.2 Laws of reflection and refraction (statement only) 8.3 Refractive index -Definition, Formula, and simple numerical
10th	18.10.23	8.4 critical angle and total internal reflection – concept, definition and explanation
	19.10.23	8.5 Refraction through prism (ray diagram and formula only- No derivation) 8.6 Fiber Optics- Definition, Properties and applications
	20.10.23	UNIT 09 ELECTROSTATIC AND MAGNETOSTATIC 9.1 Electrostatics - Definition and Concept 9.2 Statement and Explanation of Coulombs law, Definition of unit charge 9.3 Absolute and Relative Permittivity -Definition , Relation and Unit

11th	01.11.23	9.4 Electric Potential and Electric Potential difference (Definition , formula and SI units) 9.5 Electric Field, Electric Field intensity (E) 9.6 Capacitance -Definition, formula and Unit
	02.11.23	9.7 Series and Parallel combination of Capacitors (No derivation, formula for effective/combined/total capacitance and Simple numericals) 9.8 Magnet, Properties of a magnet 9.9 Coulombs Laws in Magnetism -Statement and Explanation, Unit Pole(Definition)
	03.11.23	9.10 Magnetic field, Magnetic Field intensity (H)-Definition, formula and SI units) 9.11 Magnetic lines of Force(Definition and Properties) 9.12 Magnetic Flux and Magnetic Flux density(B)-Definition formula and unit
	04.11.23	CLASS TEST-06
12th	08.11.23	UNIT-10 CURRENT ELECTRICITY 10.1 Electric Current -Definition, Formula and SI units 10.2 Ohms law and it's applications
	09.11.23	10.3 Series and Parallel Combination of resistors (No derivation, Formula for effective/combined/total resistance and simple numericals)
	10.11.23	10.4 Kirchhoffs laws(statement and Explanation with diagram) 10.5 Application of Kirchhoffs law to Wheatstone bridge - Balanced condition of Wheatstone bridge
	11.11.23	CLASS TEST-07

13th	15.11.23	UNIT- 11 ELECTROMAGNETISM AND ELECTROMAGNETIC INDUCTION 11.1 Electromagnetism -Definition and Concept 11.2 Force acting on a current carrying conductor placed in a uniform magnetic field,Fleming's left hand rule
	16.11.23	11.3 Faradays laws of Electromagnetic Induction (statement only) 11.4 Lenzs law(statement only)
	17.11.23	11.5 Fleming's Right Hand Rule 11.6 Comparison between Fleming's Right Hand Rule and Fleming's left hand rule
	18.11.23	CLASS TEST -08
14th	22.11.23	UNIT -12 MODERN PHYSICS 12.1 Laser and Laser beam (Concept and Definition) 12.2 Principle of LASER (Population Inversion and Optical Pumping)
	23.11.23	12.3 Properties and Application of LASER 12.4 Wireless Transmission -Ground Waves ,Sky Waves,Space Waves(Concept and Definition)
	24.11.23	CLASS TEST -09
	25.11.23	REVISION AND DOUBT CLEARING
15th	29.11.23	VST -01 (For Semester Examination)
	30.11.23	VST- 02

	01.12.23	DOUBT CLEARING
	02.12.23	VST-03
16th	06.12.23	VST-04
	07.12.23	DOUBT CLEARING
	08.12.23	VST-05
	09.12.23	DOUBT CLEARING

REFERENCE BOOK:

TEXTBOOK OF 11th 12th PHYSICS BY S.L. Arora.

TEXTBOOK OF 11th 12th PHYSICS NCERT

Abhipsa Mohanty
Signature

Dr. Rajan
14/08/2023
H.O.D. (Maths SSC)