



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

LESSON PLAN

Academic Session: 2024-25 (winter)

Semester: 1st SEM

Branch: civil Sec: B

Subject: APPLIED PHYSICS-I

Prepared by: Monalisa Parida

Discipline: civil Engg. (Sec B)	Semester:1st	Name Of the Teaching Faculty: Monalisa Parida (Faculty In Physics)
Subject: Engineering Physics – I	No. Of Days /Per Week Class Alloted:4p (Tue,Thu, Fri,Sat)	Semester From: Date:16/08/2024 to 10/12/2024
Week	Dates	Theory Topics
1 st	16.08.24	Introduction class
	17.08.24	Syllabus discussion
2 nd	20.08.24	Unit 1: Physical world, Units and Measurements Physical quantities; fundamental and derived
	22.08.24	Units and systems of units (FPS, CGS and SI units)
	23.08.24	Dimensions and dimensional formulae of physical quantities
	24.08.24	Principle of homogeneity of dimensions, Dimensional equations and their applications (conversion from one system of units to other, checking of dimensional equations and derivation of simple equations)
3 rd	27.08.24	Limitations of dimensional analysis. Measurements: Need, measuring instruments (vernier calliper)
	29.08.24	measuring instruments (screw gauge)
	30.08.24	measuring instruments (spherometer) types of measurement (direct, indirect)
	31.08.24	Errors in measurements (systematic and random)
4 th	03.09.24	absolute error, relative error, error propagation, error estimation
	05.09.24	significant figures Unit 2: Force and Motion Scalar and Vector quantities – examples, representation of vector, types of vectors
	06.09.24	Class test-01
5 th	10.09.24	Addition and Subtraction of

5 th		Vectors, Triangle and Parallelogram law (Statement only)
	12.09.24	Resolution of a Vector and its application to inclined plane and lawn roller
	13.09.24	Scalar and Vector Product
	14.09.24	Force, Momentum, Statement and derivation of conservation of linear momentum, its applications such as recoil of gun
6 th	17.09.24	rockets, Impulse and its applications
	19.09.24	Circular motion, definition of angular displacement, angular velocity, angular acceleration, frequency, time period
	20.09.24	Relation between linear and angular velocity, linear acceleration and angular acceleration (related numerical)
	21.09.24	Centripetal and Centrifugal forces with live examples, Expression and applications such as banking of roads and bending of cyclist
7 th	24.09.24	Class test-02
	26.09.24	Unit 3: Work, Power and Energy Work: Concept and units, examples of zero work, positive work and negative work, Friction: concept, types, laws of limiting friction
	27.09.24	coefficient of friction, reducing friction and its engineering applications, Work done in moving an object on horizontal and inclined plane for rough and plane surfaces and related applications
	28.09.24	Energy and its units, kinetic energy, gravitational potential energy with examples and derivations

8th	01.10.24	mechanical energy, conservation of mechanical energy for freely falling bodies, trans- formation of energy (examples).
	03.10.24	Power and its units, power and work relationship, calculation of power (numerical problems).
	04.10.24	Class test-03
	05.10.24	Unit 4: Rotational Motion Translational and rotational motions with examples, Definition of torque and angular momentum and their examples
9th	15.10.24	Conservation of angular momentum (quantitative) and its applications
	17.10.24	Moment of inertia and its physical significance, radius of gyration for rigid body,
	18.10.24	Theorems of parallel and perpendicular axes (statements only)
	19.10.24	Moment of inertia of rod, disc, ring and sphere (hollow and solid); (Formulae only).
10th	22.10.24	Class test-04
	24.10.24	Unit 5: Properties of Matter Elasticity: definition of stress and strain, moduli of elasticity,
	25.10.24	Hooke's law, significance of stress-strain curve
	26.10.24	Pressure: definition, units, atmospheric pressure, gauge pressure
11th	29.10.24	absolute pressure, Fortin's Barometer and its applications
12th	01.11.24	Surface tension: concept, units, cohesive and adhesive forces
	02.11.24	angle of contact, Ascent Formula (No derivation), applications of surface tension
13th	05.11.24	effect of temperature and impurity on surface tension Viscosity and coefficient of viscosity: Terminal velocity
	07.11.24	Stoke's law and effect of

		temperature on viscosity, application in hydraulic systems
13th	08.11.24	Hydrodynamics: Fluid motion, stream line and turbulent flow Reynold's number Equation of continuity, Bernoulli's Theorem (only formula and numerical) and its applications
	09.11.24	Class test -05
14 th	12.11.24	Unit 6: Heat and Thermometry Concept of heat and temperature
	14.11.24	modes of heat transfer (conduction, convection and radiation with examples)
	16.11.24	specific heats, scales of temperature and their relationship
15th	19.11.24	Types of Thermometer (Mercury thermometer, Bimetallic thermometer)
	21.11.24	Platinum resistance thermometer, Pyrometer) and their uses
	22.11.24	Expansion of solids, liquids and gases
	23.11.24	coefficient of linear, surface and cubical expansions and relation amongst them
16th	26.11.24	Co-efficient of thermal conductivity, engineering applications
	28.11.24	Discussion class
	29.11.24	Class test-06
	30.11.24	Doubt clearing class
17th	03.12.24	VST-01
	05.12.24	
	06.12.24	
	07.12.24	
18 th	10.12.24	

REFERENCE BOOK:

S.L. ARORA

H.C. VERMA