



BHUBANANANDA ORISSA SCHOOL OF ENGINEERING, CUTTACK

DEPARTMENT: HUMANITIES AND SCIENCES

LESSON PLAN

SUBJECT: - APPLIED PHYSICS – I (THEORY)

ACADEMIC SESSION:-2025-26

SEMESTER: - 1ST SEM (WINTER-2025)

SECTION: - G BRANCH:- MECHANICAL

Prepared by Shri Jiten Mishra

(Lecturer Stage-II in Physics)

Lesson Plan

Discipline : Mechanical Sec G		Semester : 1st	Name of Faculty : Shri Jiten Mishra
Subject: Applied Physics - I	No. of days per week Class allotted: 4P (Mon, Tue, Wed, Fri)		Semester From Date: 06-08-2025 to 04-12-2025
Week	Class Day	Dates	Theory Topics
1st	1	06-08-2025	Introduction to the Subject, Syllabus and Course Outcomes
	2	08-08-2025	Unit 1: Physical world, Units and Measurements Physical quantities; fundamental and derived, Units and systems of units (FPS, CGS and SI units)
	3	11-08-2025	Dimensions and dimensional formulae of physical quantities Principle of homogeneity of dimensions
	4	12-08-2025	Dimensional equations and their applications - conversion from one system of units to other
2nd	5	13-08-2025	Checking of dimensional correctness of equations
	6	18-08-2025	Derivation of simple equations, Limitations of dimensional analysis.
	7	19-08-2025	Measurements: Need, measuring instruments, least count, types of measurement (direct, indirect)
	8	20-08-2025	Error propagation, Error estimation
3rd	9	22-08-2025	Significant figures
	10	25-08-2025	Unit 2: Force and Motion Scalar and Vector quantities – examples, representation of vector, types of vectors.
	11	26-08-2025	types of vectors (Continue), Addition and Subtraction of Vectors, Triangle and Parallelogram law (Statement only)
	12	01-09-2025	Scalar Product,
4th	13	02-09-2025	Vector Product,
	14	03-09-2025	Resolution of a Vector and its application to inclined plane and lawn roller.
	15	08-09-2025	Force, Momentum, Statement and derivation of conservation of linear momentum,
	16	09-09-2025	Its applications such as recoil of gun, rockets, Impulse and its applications.
5th	17	10-09-2025	Circular motion, definition of angular displacement, angular velocity, angular acceleration, frequency, time period
	18	12-09-2025	Relation between linear and angular velocity, linear acceleration and angular acceleration (related numerical)
	19	15-09-2025	Centripetal and Centrifugal forces with live examples, Expression and applications such as banking of roads and bending of cyclist.
	20	16-09-2025	Doubt Clear Class
6th	21	17-09-2025	Unit 3: Work, Power and Energy Work: Concept and units, examples of zero work, positive work and negative work
	22	19-09-2025	Friction: concept, types,
	23	22-09-2025	Laws of limiting friction, coefficient of friction
	24	23-09-2025	Reducing friction and its engineering applications,
7th	25	24-09-2025	Work done in moving an object on horizontal and inclined plane for rough and plane surfaces and related applications.
	26	26-09-2025	Energy and its units, kinetic energy, gravitational potential energy with examples Derivation of gravitational potential energy
	27	03-10-2025	Mechanical energy, conservation of mechanical energy for freely falling bodies, trans- formation of energy (examples).
	28	06-10-2025	Power and its units, power and work relationship, calculation of power (numerical problems).

Week	Class Day	Dates	Theory Topics
8th	29	08-10-2025	Doubt Clear Class
	30	10-10-2025	Unit 4: Rotational Motion Translational and rotational motions with examples, Definition of torque and angular momentum and their examples
	31	13-10-2025	Conservation of angular momentum (quantitative) and its applications.
	32	14-10-2025	Moment of inertia and its physical significance,
9th	33	15-10-2025	Radius of gyration for rigid body, Theorem of parallel axes (statements only),
	34	17-10-2025	Theorem of perpendicular axes (statements only),
	35	20-10-2025	Moment of inertia of rod, disc, ring and sphere (hollow and solid); (Formulae only).
	36	22-10-2025	Doubt Clear Class
10th	37	24-10-2025	Unit 5: Properties of Matter Elasticity: definition of stress and strain
	38	27-10-2025	Moduli of elasticity, Hooke's law, significance of stress-strain curve.
	39	28-10-2025	Pressure: definition, units, atmospheric pressure, gauge pressure, absolute pressure
	40	29-10-2025	Fortin's Barometer and its applications.
11th	41	31-10-2025	Surface tension: concept, units, cohesive and adhesive forces
	42	03-11-2025	angle of contact, Ascent Formula (No derivation)
	43	04-11-2025	applications of surface tension, effect of temperature and impurity on surface tension.
	44	07-11-2025	Viscosity and coefficient of viscosity:
12th	45	10-11-2025	Terminal velocity
	46	11-11-2025	Stoke's law and effect of temperature on viscosity, application in hydraulic systems.
	47	12-11-2025	Hydrodynamics: Fluid motion, stream line and turbulent flow
	48	14-11-2025	Reynold's number Equation of continuity
13th	49	17-11-2025	Bernoulli's Theorem (only formula and numericals) and its applications.
	50	18-11-2025	Doubt Clear Class
	51	19-11-2025	Unit 6: Heat and Thermometry Concept of heat and temperature, modes of heat transfer (conduction, convection and radiation with examples),
	52	21-11-2025	Scales of temperature and their relationship
14th	53	24-11-2025	Specific heats
	54	25-11-2025	Types of Thermometer (Mercury thermometer, Bimetallic thermometer and their uses.
	55	26-11-2025	Platinum resistance thermometer, Pyrometer and their uses.
	56	28-11-2025	Expansion of solids, liquids and gases, coefficient of linear, surface and cubical expansions
15th	57	01-12-2025	Relation amongst them
	58	02-12-2025	Co-efficient of thermal conductivity, engineering applications
	59	03-12-2025	Very Similar Test
	60	04-12-2025	Discussion on VST

BOOK REFERENCE:

- 1 Applied Physics-I (English) by Prof. Vinod Kumar Yadav
- 2 Text Book of Physics for Class XI & XII(Part-I, Part-II); N.C.E.R.T., Delhi
- 3 Concepts in Physics by HC Verma, Vol. I & II, Bharti Bhawan Ltd. New Delhi

Concerned faculty:
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