



LESSON PLAN

Applied Physics – I

Name of the Teaching Faculty: Mr. RAJKISHORE BEHERA

Chapter wise distribution of periods

SL NO	NAME OF THE CHAPTER	NO. OF PERIODS
01	UNIT 1: PHYSICAL WORLD, UNITS AND MEASUREMENTS	08
02	UNIT 2: FORCE AND MOTION	09
03	UNIT 3: WORK, POWER AND ENERGY	09
04	UNIT 4: ROTATIONAL MOTION	10
05	UNIT 5: PROPERTIES OF MATTER	13
06	UNIT 6: HEAT AND THERMOMETRY	11
TOTAL	06	60

WEEK	CLASS	TOPIC
1ST	01	Physical quantities; fundamental and derived, Units and systems of units (FPS, CGS and SI units),
	02	Dimensions and dimensional formulae of physical quantities
	03	Principle of homogeneity of dimensions, Dimensional equations and their applications
	04	checking of dimensional equations and derivation of simple equations), Limitations of dimensional analysis
2ND	05	Measurements: Need, measuring instruments, least count, types of measurement
	06	Errors in measurements (systematic and random)
	07	absolute error, relative error
	08	Error propagation, error estimation and significant figures.
3RD	09	Scalar and Vector quantities – examples, representation of vector, types of vectors.

	10	Addition and Subtraction of Vectors, Triangle and Parallelogram law (Statement only)
	11	Scalar and Vector Product,
	12	Resolution of a Vector and its application to inclined plane and lawn roller.
4TH	13	Force, Momentum, Statement and derivation
	14	Conservation of linear momentum, its applications such as recoil of gun, rockets, Impulse and its applications.
	15	Circular motion, definition of angular displacement, angular velocity, angular acceleration,
	16	frequency, time period, Relation between linear and angular velocity, linear acceleration and angular acceleration (related numerical)
5TH	17	Centripetal and Centrifugal forces with live examples, Expression and applications such as banking of roads and bending of cyclist.
	18	Work: Concept and units, examples of zero work, positive work and negative work
	19	Friction: concept, types, laws of limiting friction, coefficient of friction, reducing friction and its engineering applications
	20	Work done in moving an object on horizontal and inclined plane for rough and plane surfaces and related applications.
6TH	21	Energy and its units, kinetic energy
	22	gravitational potential energy with examples and derivations, mechanical energy
	23	Conservation of mechanical energy for freely falling bodies, transformation of energy (examples).
	24	Power and its units
7TH	25	power and work relationship, calculation of power
	26	calculation of power (numerical problems).

	27	Translational and rotational motions with examples
	28	Definition of torque and angular momentum and their examples
8TH	29	Conservation of angular momentum (quantitative) and its applications.
	30	Moment of inertia and its physical significance,
	31	radius of gyration for rigid body
	32	Theorems of parallel and perpendicular axes (statements only)
9TH	33	Moment of inertia of rod
	34	Moment of inertia of disc
	35	Moment of inertia of ring
	36	Moment of inertia of sphere
10TH	37	Elasticity: definition of stress and strain
	38	moduli of elasticity, Hooke's law
	39	Significance of stress-strain curve.
	40	Pressure: definition, units, atmospheric pressure
11TH	41	gauge pressure, absolute pressure,
	42	Surface tension: concept, units
	43	cohesive and adhesive forces, angle of contact, Ascent Formula (No derivation)

	44	Applications of surface tension, effect of temperature and impurity on surface tension.
12TH	45	Viscosity and coefficient of viscosity
	46	Terminal velocity, Stoke's law and effect of temperature
	47	Bernoulli's Theorem (only formula and numerical) and its applications
	48	Hydrodynamics: Fluid motion
13TH	49	stream line and turbulent flow, Reynold's number Equation of continuity
	50	Concept of heat and temperature
	51	modes of heat transfer (conduction, convection and radiation with examples)
	52	, specific heats, scales of temperature and their relationship
14TH	53	(Mercury thermometer,
	54	Bimetallic thermometer
	55	Platinum resistance thermometer
	56	Pyrometer
15TH	57	Expansion of solids, liquids and gases
	58	, coefficient of linear, surface and cubical expansions
	59	Relation between coefficient of linear, surface and cubical expansions
	60	Co-efficient of thermal conductivity, engineering applications.