NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)

LESSON PLAN

SUBJECT: TH-2 (APPLIED PHYSICS I)

Name Of The Faculty :- Mr. Saumyaranjan Panda, Miss Basumati Behera
Branch :- AE/ME/CE/EE/EEE **Semester :-** 1st
Session :- 2025-26 **Examination :-** 2025 (w)

CHAPTER WISE DISTRIBUTION OF PERIODS

serial no.	Name of the unit	Distribution of period per unit needed
1	Physical world, Units and Measurements	7
2	Force and Motion	10
3	Work, Power and Energy	11
4	Rotational Motion	10
5	Properties of Matter	12
6	Heat and Thermometry	11
	Total 60	60

30.07.2025 30-07-2025 30.07.2025

Sign of Faculty Sign of H.O.D.

Name of the programme: Diploma in Mechanical,Automobile,,electrical, Civil and Electrical & Electronics Engineering	**Semester:** 1st	**Name of the Teaching Faculty:** Mr. Saumyaranjan Panda, . Miss Basumati Behera	
		Academic session : 2025-26 **Examination :** 2025 (W)	
Course Code: TH-2	**Course Year:** First Year	**No. of Classes Alloted Per Week :**	4
		Planned Classes Required to Complete the Course	60
Week	**Class Day**	**Topics to be Covered**	
1st	**1st**	**Unit 1: Physical world, Units and Measurements** Physical quantities; fundamental and derived, Units and systems of units (FPS, CGS and SI units)	
	2nd	Dimensions and dimensional formulae of physical quantities, Principle of homogeneity of dimensions,	
	3rd	Dimensional equations and their applications (conversion from one system of units to other,	
	4th	Checking of dimensional equations and derivation of simple equations), Limitations of dimensional analysis.	
2nd	**1st**	Measurements: Need, measuring instruments, least count,	
	2nd	types of measurement (direct, indirect),Errors in measurements (systematic and random),	
	3rd	absolute error, relative error, error propagation,error estimation and significant figures.	
	4th	**Unit 2: Force and Motion** Scalar and Vector quantities – examples, representation of vector,Types of vectors.	
3rd	**1st**	Addition and Subtraction of Vectors,Triangle and Parallelogram law (Statement only)	
	2nd	Resolution of a Vector and its application to inclined plane and lawn roller, Scalar and Vector Product.	
	3rd	Force, Momentum, Statement, derivation of conservation of linear momentum	
	4th	its applications such as recoil of gun, rockets Impulse and its applications	
4th	**1st**	Circular motion, definition of angular displacement, angular velocity, angular acceleration,	
	2nd	Frequency, time period, Relation between linear and angular velocity linear acceleration. and angular acceleration (related numerical),	
	3rd	Relation between linear acceleration. Angular acceleration (related numerical)	
	4th	Centripetal and Centrifugal forces with live examples.	
5th	**1st**	Expression and applications such as banking of roads and bending of cyclist	
	2nd	**Unit 3: Work, Power and Energy** Work: Concept and units, examples of zero work, positive work and negative work	
	3rd	Friction: concept, types, laws of limiting friction, coefficient of friction,	
	4th	claws of limiting friction, coefficient of friction coefficient of friction,	

Week	Class Day	Topics to be Covered
6th	1st	work relationship Calculation of power (numerical problems)
	2nd	Reducing friction and its engineering applications
	3rd	Work done in moving an object on horizontal and inclined plane for rough and plane surfaces and related applications
	4th	Energy and its units, kinetic energy,
7th	1st	gravitational potential energy with examples and derivations,.
	2nd	conservation of mechanical energy for freely falling bodies trans- formation of energy (examples)
	3rd	Mechanical energy,Power and its units, power and work relationship ,
	4th	Calculation of power (numerical problems)
8th	1st	**Unit 4: Rotational Motion** Translational motions with examples ,Rotational motion with example
	2nd	Definition of torque and angular momentum and their examples
	3rd	Conservation of angular momentum (quantitative) and its applications.
	4th	Moment of inertia and its physical significance, radius of gyration for rigid body
9th	1st	Theorems of parallel and perpendicular axes (statements only)
	2nd	Theorems of parallel and perpendicular axes (statements only)
	3rd	Relation between torque and momen of inertia , between angular momentum and moment of inertia
	4th	Moment of inertia of rod, disc
10th	1st	Moment of inertia of ring and sphere (hollow and solid); (Formulae only).
	2nd	**Unit 5: Properties of Matter:** Elasticity: Definition of stress and strain, moduli of elasticity
	3rd	Hooke's law, significance of stress-strain curve
	4th	Pressure: definition, units, atmospheric pressure,
11th	1st	Fortin's Barometer and its applications
	2nd	Surface tension: concept, units,Cohesive and adhesive forces, angle of contact,
	3rd	Ascent Formula (No derivation), applications of surface tension
	4th	Effect of temperature and impurity on surface tension,Viscosity and coefficient of viscosity
12th	1st	Terminal velocity, Application in hydraulic systems
	2nd	Stoke's law and effect of temperature on viscosity
	3rd	Hydrodynamics: Fluid motion, stream line and turbulent flow
	4th	Reynolds's number Equation of continuity

Week	Class Day	Topics to be Covered
13th	1st	Bernoulli's Theorem (only formula and numerical) and its applications and problems
	2nd	**Unit 6: Heat and Thermometry** Concept of heat and temperature,
	3rd	modes of heat transfer (conduction, convection and radiation with examples),
	4th	Specific heats, scales of temperature and their relationship
14th	1st	Types of Thermometer (Mercury thermometer, Bimetallic thermometer
	2nd	Platinum resistance thermometer, Pyrometer) and their uses.
	3rd	(Mercury thermometer, Bimetallic thermometer
	4th	Expansion of solids, liquids and gases,
15th	1st	Coefficient of linear, surface and cubical expansions
	2nd	Relation amongst coefficient of linear,
	3rd	surface and cubical expansions
	4th	Co-efficient of thermal conductivity, Engineering applications

30.07.2025 30-07-2025

Sign. of Faculty

30.07.2025

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