UTKALMANI GOPABANDHU INSTITUTE OF ENGINEERING, ROURKELA

LESSON PLAN

2024 - 2025

DEPARTMENT OF MATH & SCIENCE

LESSON PLAN

SUBJECT CODE :Th.2

NAME : SIDDHANTA MOHANTA

BRANCH : MATH & SCIENCE

SUBJECT : PHYSICS

NUMBER OF MODULES: 6

CLASSES REQUIRED : 60

PRE-REQUISITE: To understand the basic principles of science and technology. Physics strengthens quantitative reasoning and problem solving skills that are valuable in areas beyond physics. Students who study physics or engineering physics are prepared to work on forefront ideas in science and technology.

SL. NO	TOPIC	NO. OF PERIOD TAKEN	SIGN.
1	**UNIT -1**		
2	Physical quantity and classification as derived and fundamenta physical quantity	1	
3	Units and systems of units	1	
4	Defination of dimension and dimensional formula of different physical quantity	1	
5	Dimensional equations and their applications	2	
6	Measuring Instruments	1	
7	Error and error propagation	1	
8	significant figures.	1	
9	Numericals discussion	1	
10	**UNIT - 2**		
11	Scalar and vector quantities types of vector. Examples	1	
12	Tringle and parallelogram law of vector addition Numericals discussion	1	
13	Scalar and vector product	1	
14	Resolution of a Vector and its application to inclined plane and lawn roller	1	
15	Momentum, Statement and derivation of conservation of linear momentum	1	
16	Application of conservation of linear momentum	1	
17	Circular motion, definition of angular displacement, angular velocity, angular acceleration	1	

18	Relation between linear and angular velocity, linear acceleration and angular acceleration (related numerical)	1	
19	Centripetal and Centrifugal forces with live examples	1	
20	applications such as banking of roads and bending of cyclist.	1	
21	Class Test	1	
22	**UNIT -3**		
23	Work: Concept and units, examples of zero work, positive work and negative work	1	
24	Friction: concept, types, laws of limiting friction,	1	
25	coefficient of friction, reducing friction and application	1	
26	Workdone in moving an object on horizontal and inclined plane for rough and plane surfaces and related applications	1	
27	Energy and its units, kinetic energy, gravitational potential energy with examples and derivation	1	
28	mechanical energy, conservation of mechanical energy for freely falling bodies, trans- formation of energy	1	
29	Power and its units, power and work relationship, calculation of power	1	
30	Numericals discussion	1	
31	**Unit 4:**		
32	Rotational Motion: Translational and rotational motions with examples, Definition of torque and angular momentum and their examples,	1	
33	Conservation of angular momentum (quantitative) andits applications.	1	
34	Moment of inertia and its physical significance, radius of gyration for rigid body	1	
35	Theorems of parallel and perpendicular axes	1	
36	Moment of inertia of rod, disc, ring and sphere	1	
37	Class Test	1	

38	**UNIT -5**		
39	Elasticity: definition of stress and strain and its type, Hooke's law	1	
40	Hooke's law, significance of stress-strain curve.	1	
41	Pressure: definition, units, atmospheric pressure,	1	
42	gauge pressure, absolute pressure, Fortin's Barometer and its applications and numericals	2	
43	Surface tension: concept, units, cohesive and adhesive forces, angle of contact, Ascent Formula	1	
44	applications of surface tension, effect of temperature and impurity on surface tension.	1	
45	Viscosity and coefficient of viscosity, Terminal velocity	1	
46	Stoke's law and effect of temperature on viscosity, application in hydraulic systems	1	
47	Hydrodynamics: Fluid motion, stream line and turbulentflow	1	
48	Reynold's number Equation of continuity, Bernoulli's Theorem and its applications.	1	
49	Numericals discussion	1	
50	**UNIT -6**		
51	Concept of heat and temperature, modes of heat transfer	1	
52	specific heats, scales of temperature and their relationship	1	
53	Types of Thermometer (Mercury thermometer, Bimetallic thermometer, Platinum resistance thermometer, Pyrometer) and their uses.)	2	
54	Expansion of solids, liquids and gases	1	
55	coefficient of linear, surface and cubical expansions and relation amongst them,	1	
56	Co-efficient of thermal conductivity, engineering applications	1	

57	Class Test(Oral) and Numerical discussion	1	
58	REVISION UNIT -1 TO UNIT - 2	2	
59	REVISION UNIT -3 TO UNIT - 4	2	
60	REVISION UNIT -5 TO UNIT -6	2	