



GOVERNMENT POLYTECHNIC DARLIPALI, SUNDARGARH

ସରକାରୀ ବହୁବୃତ୍ତି ଅନୁଷ୍ଠାନ ଦଲିପାଲି, ସୁନ୍ଦରଗଡ଼

GOVERNMENT OF ODISHA | ଓଡ଼ିଶା ସରକାର

A/ P: Darlipali, NTPC Darlipali, Dist.: Sundargarh, Odisha- 758001

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DEPARTMENT OF HUMANITIES & SCIENCES

LESSON PLAN (ACADEMIC SESSION 25-26)

Discipline: Physics	Semester: 1st	Branch: Mechatronics	Name of the teaching faculty: Rashmi Rekha Behera
Subject: Applied Physics I	No of Days/Week class allotted: 4	Semester from Date: 06/08/2025 to 04/12/2025 No of weeks: 17 No. of Period Available: 60	
Month	Week	No of periods available	Class Day Theory topics to be covered
AUGUST	1st	3P	Physical quantities; fundamental and derived, Units and systems of units (FPS, CGS and SI units)
			Dimensions and dimensional formulae of physical quantities
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	2nd	3P	Principle of homogeneity of dimensions, Dimensional equations and their applications (conversion from one system of units to other)
			Checking of dimensional equations
			Derivation of simple equations, Limitations of dimensional analysis
	3rd	4p	Measurements: Need, measuring instruments, least count, types of measurement (direct, indirect)
			Errors in measurements (systematic and random), absolute error, relative error
			Error propagation, error estimation and significant figures
			Numericals
SEP	4th	2p	Scalar and Vector quantities – examples, representation of vector
			types of vectors
	5th	3P	Addition and subtraction of vectors
			Triangle and parallelogram law of vector addition, Scalar Product
			Vector Product
	6th	4P	Resolution of a Vector and its application to inclined plane and lawn
			Force, Momentum, Statement and derivation of conservation of linear momentum
			its applications such as recoil of gun, rockets, Impulse and its applications.
			Circular motion, definition of angular displacement, angular velocity, angular acceleration, frequency, time period

OCTOBER	7th	4P	Relation between linear and angular velocity, linear acceleration and angular acceleration (related numerical)
			Centripetal and Centrifugal forces with live examples
			Expression and applications such as banking of roads and bending of Numericals
	8th	4P	Work: Concept and units, examples of zero work, positive work and negative work
			Friction: concept, types, laws of limiting friction, coefficient of friction
			reducing friction and its engineering applications
			Workdone in moving an object on horizontal and inclined plane for rough and plane surfaces and related applications.
	9th	3P	Energy and its units, kinetic energy
			gravitational potential energy with examples and derivations
			mechanical energy, conservation of mechanical energy for freely falling bodies,trans- formation of energy (examples)
	10th	4P	Power and its units, power and work relationship
			calculation of power (numerical problems)
			Translational and rotational motions with examples, Definition of torque and angular momentum and their examples
			Conservation of angular momentum (quantitative) and its applications.
	11th	3P	Moment of inertia and its physical significance
			radius of gyration for rigid body, Theorems of parallel and perpendicular axes (statements only)
			Moment of inertia of rod, disc, ring and sphere (hollow and solid); (Formulae only)
	12th	4P	Numericals
			Elasticity: definition of stress and strain, moduli of elasticity
			Hooke's law, significance of stress-strain curve
			Pressure: definition, units, atmospheric pressure, gauge pressure, absolute pressure
	13th	3P	Fortin's Barometer and its applications
			Surface tension: concept, units, cohesive and adhesive forces, angle of contact
			Ascent Formula (No derivation), applications of surface tension

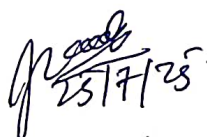
NOVEMBER

14th	4P	effect of temperature and impurity on surface tension.
		Viscosity and coefficient of viscosity: Terminal velocity
		Stoke's law and effect of temperature on viscosity, application in hydraulic systems
15th	4P	Hydrodynamics: Fluid motion, stream line and turbulent flow
		Reynold's number Equation of continuity
		Bernoulli's Theorem (only formula and numericals) and its applications
		Numericals
16th	4P	Concept of heat and temperature, modes of heat transfer (conduction, convection and radiation with examples)
		specific heats, scales of temperature and their relationship
		Types of Thermometer (Mercury thermometer, Bimetallic thermometer
		Platinum resistance thermometer, Pyrometer) and their uses
17th	3P	Expansion of solids, liquids and gases, coefficient of linear, surface and cubical expansions and relation amongst them,
		Co-efficient of thermal conductivity, engineering applications
		Revision of important topics and previous year question papers discussion
17th	3P	Revision of important topics and previous year question papers discussion

DECEMBER

Rashmi Rekha Behera
25/07/25
Rashmi Rekha Behera
Lect. Stg. I (Physics)

K. N. S. Behera
25/07/25
HOD,
Humanities & Sc.


25/7/25
Principal,
Govt. Polytechnic Darlipali