"PVC"NSSK GOVT. POLYTECHNIC BILASPUR AT KALOL
PLANNED THEORY SYLLABUS COVERAGE

GPB	Department:-	Applied Sciences & Humanaties				
	Subject:-	Applied Physics - I (BS103)				
	Sem & Branch:-	1st Sem. Electrical & Mechanical Engg.	Duration: - 10 Aug.2023-04 Dec.2023			
SYLLABUS COVERAGE	Total Periods:-	Theory:- 56	Practical : - 28			

Sr. No.	Period No.	Topic	Detail of Contents	Instruction Referecne	Additional study recommended	Remarks
1	10	**Physical world, Units and Measurements**	Physical quantities: fundamental and derived, Units and systems of units (FPS, CGS and SI units), Dimensions and dimensional formulae of physical quantities, Principle of homogeneity of dimensions, Dimensional equations and their applications (conversion from one system of units to other, checking of dimensional equations and derivation of simple equations), Limitations of dimensional analysis. Errors in measurements (systematic and random), absolute error, relative error, error estimation and significant figures.	Applied Physics - I Eagle Prakashan	Concepts of Physics Vol-I, by H.C. Verma (ii) Engineering Physics by DK Bhatacharya and Poonam Tandan	
2	10	**Force and Motion**	Scalar and Vector quantities – examples, representation of vector, types of vectors. Addition and Subtraction of Vectors, Triangle and Parallelogram law (Statementonly), Scalar and Vector Product, Resolution of a Vector and its application to inclined plane (Rectangular components) and lawn roller. 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. 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 cyclist.	Applied Physics - I Eagle Prakashan	Concepts of Physics Vol-I, by H.C. Verma (ii) Engineering Physics by DK Bhatacharya and Poonam Tandan	
3	8	**Work Power and Energy**	Work: Concept and units, examples of zero work, positive work and negative work Friction: concept, types, laws of limiting friction, coefficient of friction, methods for reducing friction and its engineering applications, Work done in moving an object on horizontal and inclined plane for rough and plane surfaces and related applications. Energy and its units, kinetic energy, gravitational potential energy with examples and derivations, Mechanical energy, conservation of mechanical energy for freely falling bodies, transformation of energy (examples). Power and its units, power and work relationship, calculation of power (numerical problems).	Applied Physics - I Eagle Prakashan	Concepts of Physics Vol-I, by H.C. Verma (ii) Engineering Physics by DK Bhatacharya and Poonam Tandan	
4	9	**Rotational Motion**	Translational and rotational motions with examples. Definition of torque and angular momentum and their examples. Conservation of angular momentum (quantitative) and its applications. 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)	Applied Physics - I Eagle Prakashan	Concepts of Physics Vol-I, by H.C. Verma (ii) Engineering Physics by DK Bhatacharya and Poonam Tandan	

Sr. No.	Period No.	Topic	Detail of Contents	Instruction Referecne	Additional study recommended	Remarks
5	10	Properties of Matter	Elasticity: Definition of stress and strain, different types of modulii of elasticity, Hooke's law, significance of stress-strain curve. Pressure: definition, units, atmospheric pressure, gauge pressure, absolute pressure, 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, effect of temperature and impurity on surface tension.	Applied Physics - I Eagle Prakashan	Concepts of Physics Vol-I, by H.C. Verma (ii) Engineering Physics by DK Bhatacharya and Poonam Tandan	
6	9	Heat and Thermometry	Concept of heat and temperature. Modes of heat transfer (conduction, convection and radiation with examples), scales of temperature and their relationship, Types of Thermometer (Mercury thermometer, bimetallic thermometer, Platinum resistance thermometer, Pyrometer) and their uses. Expansion of solids, liquids and gases, coefficient of linear, surface and cubical expansions and relation amongst them, Co-efficient of thermal conductivity.	Applied Physics - I Eagle Prakashan	Concepts of Physics Vol-I, by H.C. Verma (ii) Engineering Physics by DK Bhatacharya and Poonam Tandan	

Signature of Teacher

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HOD

Applied Scinecne and Humanities