

Government Polytechnic, Tikarpada Lesson Plan			
Discipline : MECHATRONICS ENGG.			Name of the Teaching Faculty : Anup Kumar Panda
Subject : Engineering Mechanics		No. of Days / per week class = 2	From date : 17.08.2026 To Date : 17.04.2027
MONTH	Week	Day	Topics
August	4th	1st	Significance and relevance of Mechanics, Applied mechanics, Statics, Dynamics.
		1st	Space, time, mass, particle, flexible body and rigid body.
	5th	1st	Scalar and vector quantity, Units of measurement (SI units) - Fundamental units and derived units.
		1st	Force – unit, representation as a vector and by Bow’s notation,characteristics and effects of a force, Principle of transmissibility of force
	6th	1st	Force system and its classification.
		1st	Resolution of a force - Orthogonal components of a force, Moment of a force
September	2nd	1st	Law of moment, State Varignon’s Theorem, Couple and it’s moment.
		1st	Composition of forces, Resultant force.
	4th	1st	Analytical method for determination of resultant for concurrent, non-concurrent and parallel co planar force system
		1st	Triangle Law of forces and Polygon Law of forces (Statement Only),
			Class Test -I
	5th	1st	Parallelogram law of Forces (Statement and Derivation)
1st		Simple Numerical on above.	
October	2nd	1st	Equilibrium and Equilibrant, Condition of Equilibrium
		1st	Free body and Free body diagram.
	3rd	1st	Analytical and graphical methods of analyzing equilibrium.
		1st	Lami’s Theorem – Statement and Explanation.
	5th	1st	Application for various engineering problems. 3.6 Simple Numerical on above.
		1st	Types of Loads
November	1st	1st	Beam, Various types of Beams
		1st	Supports with their Reactions with neat sketch.
	2nd	1st	Friction and its relevance in engineering, types. 4.2 Laws of friction
		1st	limiting equilibrium, limiting friction, co-efficient of friction, angle of friction, angle of repose.
	3rd	1st	Relation between co-efficient of friction and angle of friction., Simple Numerical on above
		1st	Equilibrium of bodies on level surface subjected to force parallel and inclined to plane.
			Internal Assessment - I
	4th	1st	Equilibrium of bodies on inclined plane subjected to force parallel to the plane only.
		1st	Ladder Friction
5th	1st	Simple Numerical on above	
	1st	Definition of Centroid, Centroid of geometrical plane figures (square, rectangle, triangle, circle, semi circle, quarter circle)	
December	2nd	1st	Locate centroid of C, I section
		1st	Locate centroid of L, T section
	3rd	1st	Definition of Centre of Gravity (C.G.), Centre of Gravity of simple solids (Cube, cuboid)
		1st	Centre of Gravity of simple solids (cone, cylinder)
	4th	1st	Centre of Gravity of simple solids (sphere, hemisphere)
		1st	Numericals on the above
5th	1st	Definition of Moment of Inertia (M.I.), M.I. of Plane Figures- (rectangle, square)	
	1st	M.I. of Plane Figures- (triangle, circle, semicircle)	
January	2nd	1st	Parallel Axis Theorem (Statement and Proof)
		1st	Perpendicular Axis Theorem (Statement and Proof)
			Class Test -2
	3rd	1st	Determination of Moment of Inertia of Composite I - Section
		1st	Determination of Moment of Inertia of Composite T - Section
	4th	1st	Simple lifting machine, load, effort, mechanical advantage, Velocity ratio (V.R.)
		1st	efficiency of machines, Applications and advantages
	5th	1st	Law of machine, Ideal machine, friction in machine, maximum Mechanical advantage and efficiency.
1st		Reversible and non-reversible machines, conditions for reversibility.	

February	1st	1st	Determination of MA, VR and Efficiency of Simple Axle and wheel, Differential Axle and Wheel
		1st	Determination of MA, VR and Efficiency of Worm and worm wheel
	2nd	1st	Determination of MA, VR and Efficiency of Single purchase and double purchase crab winch
		1st	Determination of MA, VR and Efficiency of Simple Screw Jack
			Internal Assessment - 2
	3rd	1st	Determination of MA, VR and Efficiency of 1st system of pulleys
		1st	Determination of MA, VR and Efficiency of 2nd system of pulleys
	4th	1st	Determination of MA, VR and Efficiency of 3rd system of pulleys
		1st	Numericals on the above
	March	1st	1st
1st			Gear Train, Types of Gear Train
2nd		1st	Velocity Ratio of Simple and Compound Gear Train
		1st	Numerical on Simple and Compound Gear Train
3rd		1st	Revision of chapter 1
		1st	Revision of chapter 2
			Class Test -3
5th		1st	Revision of chapter 3
		1st	Revision of chapter 4
April		2nd	1st
	1st		Revision of chapter 6
	3rd	1st	Revision of chapter 7
			Internal Assessment - 3
		1st	Previous question discussion