LESSON PLAN OF MECHANICAL ENGINEERING DEPARTMENT WINTER 2025

Discipline:		Semester: 1st	Name of Faculty: Rama Krishna Sahu	
Subject: Theory-4 Engineering Mechanics		No of Days per week class allotted	Semester From: 6th August 2025 to 4th December 2025	
Week	Class No	Class days	Chapter	Theory Topic
1st	1	1st	1	Significance and relevance of Mechanics, Applied mechanics, Statics, Dynamics
	2	2nd		Space, time, mass, particle, flexible body and rigid body
	3	3rd		Scalar and vector quantity, Units of measurement (SI units) - Fundamental units and derived units.
	4	4th		Force – unit, representation as a vector and by Bow's notation
2nd	5	1st		characteristics and effects of a force, Principle of transmissibility of force, Force system and its classification.
	6	2nd		Resolution of a force - Orthogonal components of a force
	7	3rd		Moment of a force, Varignon's Theorem.
	8	4th		Composition of forces – Resultant, analytical method for determination of resultant
3rd	9	1st		Law of triangle, parallelogram and polygon of forces.
	10	2nd		Numerical
	11	3rd		Previous Semester Question discussion
	12	4th	2	Equilibrium and Equilibrant, Free body and Free body diagram, Analytical and graphical methods of analysing equilibrium
4th	13	1st		Lami's Theorem – statement and explanation, Application for various engineering problems
	14	2nd		Numerical
	15	3rd		Types of beam, supports (simple, hinged, roller and fixed)
	16	4th		loads acting on beam (vertical and inclined point load, uniformly distributed load, couple),
5th	17	1st		Beam reaction for cantilever
	18	2nd		Numerical
	19	3rd		Beam reaction for simply supported beam without overhang
	20	4th		Numerical
6th	21	1st		Beam reaction for simply supported beam with overhang
	22	2nd		Numerical
	23	3rd		Beam reaction for simply supported beam without overhang subjected to combination of Point load and uniformly distributed load
	24	4th		Numerical
7th	25	1st		Beam reaction for simply supported beam with overhang subjected to combination of Point load and uniformly distributed load
	26	2nd		Numerical
	27	3rd		Beam reaction graphically for simply supported beam subjected to vertical point loads only.
	28	4th		Numerical
8th	29	1st		Previous Semester Question discussion
	30	2nd	3	Friction and its relevance in engineering, types
	31	3rd		laws of friction, limiting equilibrium, limiting friction, co-efficient of friction

	32	4th		angle of friction, angle of repose, relation between co-efficient of friction and angle of friction
9th	33	1st		Equilibrium of bodies on level surface subjected to force parallel to plane.
	34	2nd		Numerical
	35	3rd		Equilibrium of bodies on level surface subjected to force inclined to plane
	36	4th		Numerical
10th	37	1st		Equilibrium of bodies on inclined plane subjected to force parallel to the plane only.
	38	2nd		Numerical
	39	3rd		Previous Semester Question discussion
	40	4th	4	Centroid of geometrical plane figures (square, rectangle, triangle, circle, semi-circle, quarter circle)
11th	41	1st		Centroid of composite figures composed of not more than three geometrical figures
	42	2nd		Numerical
	43	3rd		Centre of Gravity of simple solids (Cube, cuboid, cone, cylinder, sphere, hemisphere)
	44	4th		Centre of Gravity of composite solids composed of not more than two simple solids.
12th	45	1st		Numerical
	46	2nd		Previous Semester Question discussion
	47	3rd	5	Simple lifting machine, load, effort, mechanical advantage, applications and advantages.
	48	4th		Velocity ratio, efficiency of machines, law of machine.
13th	49	1st		Ideal machine, friction in machine, maximum Mechanical advantage and efficiency
	50	2nd		reversible and non-reversible machines, conditions for reversibility
	51	3rd		Velocity ratios of Simple axle and wheel, Numerical
	52	4th		Velocity ratios of Differential axle and wheel, Numerical
14th	53	1st		Velocity ratios of Worm and worm wheel, Numerical
	54	2nd		Velocity ratios of Single purchase and double purchase crab winch
	55	3rd		Numerical
	56	4th		Velocity ratios of Simple screw jack, Numerical
15th	57	1st		Weston's differential pulley block
	58	2nd		geared pulley block.
	59	3rd		Numerical
	60	4th		Previous Semester Question discussion

Signature of the faculty