LESSON PLAN

DISCIPLINE: MECHANICAL ENGINEERING	SEMESTER:1st(2021-22)	NAME OF THE FACULTY: SOMA DALABEHERA
SUBJECT: ENGINEERING MECHANICS(TH-4)	NO. OF DAYS/WEEK CLASS ALLOTTED: 4P/WEEK	SEMESTER FROM DATE: TO DATE: NO. OF WEEKS: 15

Sl No.	week	CLASS Day	Topics to be covered
1	1st	1st day	Fundamentals. Definitions of Mechanics, Statics.
		2nd day	Dynamics, Rigid Bodies
		3rd day	Force System. Definition, Classification of force system according to plane & line of action.
		4th day	Characteristics of Force & effect of Force. Principles of Transmissibility.
2	2nd	1st day	Principles of Superposition. Action & Reaction Forces
		2nd day	concept of Free Body Diagram.
		3rd day	Resolution of a Force. Definition, Method of Resolution, Types of Component forces.
		4th day	Perpendicular components & non-perpendicular components.
3	3rd	1st day	Resolution of a Force. Definition, Method of Resolution, Types of Component forces, Perpendicular components & non-perpendicular components.
		2nd day	Composition of Forces. Definition, Resultant Force, Method of composition of forces.
		3rd day	Analytical Method such as Law of Parallelogram of forces & method of resolution. 1.4.2. Graphical Method. Introduction, Space diagram, Vector diagram, Polygon law of forces.
		4th day	Resultant of concurrent, non-concurrent & parallel force system by Analytical & Graphical Method.
4	4th	1st day	Moment of Force. Definition, Geometrical meaning of moment of a force, measurement of moment of a force & its S.I units. Classification of moments according to direction of rotation, sign convention.
		2nd day	Law of moments, Varignon's Theorem, Couple – Definition, S.I. units, measurement of couple, properties of couple.
		3rd day	EQUILIBRIUM: Definition, condition of equilibrium.

		4th day	Analytical & Graphical conditions of equilibrium for concurrent forces.
5	5th	1st day	Analytical & Graphical conditions of equilibrium for non- concurrent forces.
		2nd day	Free Body Diagram.
		3rd day	Lamia's Theorem.
		4th day	Statement and Application of Lami's theorem.
6	6th	1st day	solving various engineering problems.
		2nd day	solving various engineering problems.
		3rd day	FRICTION: Definition of friction, Frictional forces.
		4th day	Limiting frictional force, Coefficient of Friction.
7	7th	1st day	Angle of Friction & Repose, Laws of Friction.
		2nd day	Advantages & Disadvantages of Friction.
		3rd day	Equilibrium of bodies on level plane.
		4th day	Force applied on horizontal & inclined plane(UP WARD)
8	8th	1st day	Force applied on horizontal & inclined plane(DOWN WARD)
		2nd day	Ladder friction
		3rd day	Ladder friction
		4th day	Wedge Friction.
9	9th	1st day	CENTROID & MOMENT OF INERTIA: Centroid – Definition.
		2nd day	Moment of an area about an axis.
		3rd day	Centroid of geometrical figures such as squares.
		4th day	Centroid of rectangles.
10	10th	1st day	Centroid of triangles, circles.
		2nd day	Centroid of semicircles & quarter circles.
		3rd day	centroid of composite figures.

		4th day	Moment of Inertia – Definition.
11	11th	1st day	Parallel axis theorem.
		2nd day	Find out M.I of rectangle by parallel axis theorem.
		3rd day	Perpendicular axis Theorems.
		4th day	Find out M.I of circle by Perpendicular axis Theorems.
12	12th	1st day	M.I. of plane lamina & different engineering sections.
		2nd day	M.I. of plane lamina & different engineering sections.
		3rd day	SIMPLE MACHINES: Definition of simple machine, velocity ratio of simple and compound gear train.
		4th day	explain simple & compound lifting machine.
13	13th	1st day	Define M.A, V.R. & Efficiency & State the relation between them.
		2nd day	State Law of Machine, Reversibility of Machine, Self Locking Machine.
		3rd day	Study of simple machines – simple axle & wheel.
		4th day	single purchase crab winch & double purchase crab winch.
14	14th	1st day	Worm & Worm Wheel, Screw Jack.
		2nd day	Types of hoisting machine like derricks etc, Their use and working principle. No problems.
		3rd day	DYNAMICS: Kinematics & Kinetics, Principles of Dynamics, Newton's Laws of Motion, Motion of Particle acted upon by a constant force.
		4th day	Equations of motion, De-Alembert's Principle.
15	15th	1st day	Work, Power, Energy & its Engineering Applications.
		2nd day	Kinetic & Potential energy & its application.
		3rd day	Momentum & impulse, conservation of energy & linear momentum.
		4th day	Collision of elastic bodies, and Coefficient of Restitution.