Academic Lesson Plan for Engg. Mechanics (Winter-2023)		
Discipline:Civil Engg & Mechanical Engg	**Semester: 1st**	**Name of the teaching faculty:**
		Tanuja Dash
		Chandrasekhar Dash
		Abhoya Mohanta
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Subject: Engg. Mechanics	**No. of days/per week Class Allotted: 4**	**Semester from: 16/08/2023-11/12/2023**
		No. of weeks:15

Week	Class day	Theory Topics
1st	1st	UNIT-1 Fundamentals. Definitions of Mechanics, Statics, Dynamics, Rigid Bodies
	2nd	Force Force System. Definition, Classification of force system according to plane & line of action.
	3rd	Characteristics of Force & effect of Force.
	4th	Principles of Transmissibility & Principles of Superposition.
2nd	1st	Action & Reaction Forces & concept of Free Body Diagram
	2nd	Resolution of a Force. Definition, Method of Resolution
	3rd	Types of Component forces, Perpendicular components & non-perpendicular components
	4th	Composition of Forces. Definition, Resultant Force
3rd	1st	Method of composition of forces, such as 1.4.1 Analytical Method such as Law of Parallelogram of forces & method of resolution.
	2nd	Graphical Method. Introduction, Space diagram, Vector diagram
	3rd	Resultant of concurrent, non-concurrent & parallel force system by Analytical & Graphical Method
	4th	Moment of Force. Definition, Geometrical meaning of moment of a force, measurement of moment of a force & its S.I units
4th	1st	Classification of moments according to direction of rotation, sign convention, Law of moments, Varignon's Theorem
	2nd	Couple – Definition, S.I. units, measurement of couple, properties of couple
	3rd	UNIT-2 EQUILIBRIUM Definition, condition of equilibrium
	4th	Analytical & Graphical conditions of equilibrium for concurrent
5th	1st	non-concurrent & Free Body Diagram.
	2nd	Lamia's Theorem – Statement
	3rd	Lamia's Theorem – promblem

	4th	Application for solving various engineering problems
6th	1st	Application for solving various engineering problems
	2nd	equilibrium for concurrent
	3rd	UNIT-3 Definition of friction, Frictional forces
	4th	Limiting frictional force, Coefficient of Friction.
7th	1st	Angle of Friction & Repose
	2nd	Laws of Friction
	3rd	Advantages & Disadvantages of Friction
	4th	Equilibrium of bodies on level plane
8th	1st	Force applied on horizontal & inclined plane (up &down).
	2nd	Ladder
	3rd	Wedge Friction
	4th	Wedge Friction Applications
9th	1st	UNIT-4 Centroid – Definition
	2nd	Moment of an area about an axis
	3rd	centroid of geometrical figures such as squares
	4th	centroid of geometrical figures such as rectangle
10th	1st	centroid of geometrical figures such as triangle
	2nd	centroid of geometrical figures such as circle
	3rd	centroid of geometrical figures such as semi circle
	4th	quarter circles
11th	1st	centroid of composite figures
	2nd	Moment of Inertia – Definition
	3rd	Parallel axis & Perpendicular axis Theorems
	4th	M.I. of plane lamina
12th	1st	M.I. of plane lamina & different engineering sections
	2nd	M.I. of plane lamina & different engineering sections
	3rd	UNIT-5 Definition of simple machine
	4th	velocity ratio of simple and compound gear train, explain simple & compound lifting machine
13th	1st	define M.A, V.R. & Efficiency & State the relation between them
	2nd	State Law of Machine
	3rd	Reversibility of Machine, Self Locking Machine.
	4th	Study of simple machines – simple axle & wheel,
14th	1st	single purchase crab winch & double purchase crab winch, Worm & Worm Wheel, Screw Jack
	2nd	Types of hoisting machine like derricks etc, Their use and working principle.
	3rd	UNIT-6 Kinematics & Kinetics, Principles of Dynamics,
	4th	Newton's Laws of Motion, Motion of Particle acted upon by a constant force
	1st	Equations of motion, DEAlembert's Principle.

15th	2nd	Work, Power, Energy & its Engineering Applications, Kinetic & Potential energy & its application
	3rd	Momentum & impulse, conservation of energy & linear momentum,
	4th	collision of elastic bodies, and Coefficient of Restitution