

**BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF MECHANICAL ENGINEERING**



LESSON PLAN

**SUBJECT: ENGINEERING MECHANICS
FACULTY: RAMAN KUMAR SETHY**

**ACCADEMIC SESSION: 2023-24
SEMESTER: 2ND
SEC: E**

**Sd/-
PTGF (MECH. ENGG.)**

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DISCIPLINE: ELECTRICAL ENGINEERING	SEMESTER: 2 ND		NAME OF THE TEACHING FACULTY: RAMAN KUMAR SETHI
SUBJECT: ENGINEERING MECHANICS	NO. OF DAYS/ PER WEEK CLASS ALLOTTED: 04 PERIODS PER WEEK	MON-4 TH PERIOD, TUE- 4 TH PERIOD, WED-4 TH PERIOD, THURS-7 TH PERIOD	SEMESTER FROM DATE: 29/01/2024 TO DATE: 14/05/2024 NO. OF WEEKS: 16 WEEKS
WEEK	CLASS DAY	NO OF PERIOD AVAILABLE	THEORY TOPICS
1 ST	29/01/2024	1	INTRODUCTION
	30/01/2024	1	1.1 Fundamentals. (Definitions of Mechanics, Statics, Dynamics, Rigid Bodies)
	31/01/2024	1	1.2 Force Force System. Definition, Classification of force system according to plane & line of action. Characteristics of Force & effect of Force. Principles of Transmissibility & Principles of Superposition.
	01/02/2024	1	Action & Reaction Forces Concept of Free Body Diagram.
2 ND	05/02/2024	1	1.3 Resolution of a Force. Definition, Method of Resolution, Types of Component forces, Perpendicular components & non-perpendicular components.
	06/02/2024	1	1.4 Composition of Forces. Definition, Resultant Force, Method of composition of forces, 1.4.1 Analytical Method such as Law of Parallelogram of forces & method of resolution.
	07/02/2024	1	1.4.2. Graphical Method. Introduction, Space diagram, Vector diagram,

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				Polygon law of forces.
	08/02/2024	1		1.4.3 Resultant of concurrent, non-concurrent & parallel force system by Analytical & Graphical Method.
3 RD	12/02/2024	1		1.5 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,
	13/02/2024	1		Law of moments, Varignon's Theorem
	15/02/2024	1		Couple Definition, S.I. units, measurement of couple, properties of couple.
	19/02/2024	1		PROBLEMS & PYQ
4 TH	20/02/2024	1		2. EQUILIBRIUM 2.1 Definition, condition of equilibrium.
	21/02/2024	1		Analytical & Graphical conditions of equilibrium for concurrent.
	22/02/2024	1		Analytical & Graphical conditions of equilibrium non-concurrent & Free Body Diagram
	26/02/2024	1		2.2. Lamia's Theorem – Statement.
5 TH	27/02/2024	1		Application for solving various engineering problems
	28/02/2024	1		Application for solving various engineering problems
	29/03/2024	1		Class Test-01
				3. FRICTION
6 TH	04/03/2024	1		3.1. Definition of friction, Frictional forces, Limiting frictional force,
	06/03/2024	1		3.1. Definition of friction, Frictional forces, Limiting frictional force.
	07/03/2024	1		Coefficient of Friction, Angle of Friction & Repose
	11/03/2024	1		Laws of Friction, Advantages & Disadvantages of Friction
7 TH	12/03/2024	1		3.2. Equilibrium of bodies on level plane –force applied on horizontal plane (up& down)
				3.2. Equilibrium of bodies on level plane –force applied on inclined plane (up& down)
	13/03/2024	1		

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	14/03/2024	1	Ladder problem
	18/03/2024	1	Ladder problem
	19/03/2024	1	Wedge problem.
8 TH	20/03/2024	1	4. CENTROID & MOMENT OF INERTIA
			4.1 Centroid – Definition, Moment of an area about an axis, Centroid of geometrical figures such as squares, rectangles.
	21/03/2024	1	4.1 Centroid – Definition, Moment of an area about an axis, Centroid of geometrical figures such as triangles.
9 TH	27/03/2024	1	4.1 Centroid – Definition, Moment of an area about an axis, Centroid of geometrical figures such as circles, semicircles.
			Centroid of quarter circles, Centroid of composite figures.
	28/03/2024	1	
10 TH	02/04/2024	1	Centroid of quarter circles, Centroid of composite figures.
			Moment of Inertia – Definition, Parallel axis Theorems.
	03/04/2024	1	
11 TH	04/04/2024	1	Moment of Inertia – Definition, Perpendicular axis Theorems.
			Theorems. M.I. of plane lamina & different engineering sections.
	08/04/2024	1	PROBLEMS & PYQ
12 TH	09/04/2024	1	Theorems. M.I. of plane lamina & different engineering sections.
			PROBLEMS & PYQ
	10/04/2024	1	INTERNAL EXAMINATION
13 TH	15/04/2024	1	Theorems. M.I. of plane lamina & different engineering sections.
			PROBLEMS & PYQ
	16/04/2024	1	5. SIMPLE MACHINES
13 TH	18/04/2024	1	5.1 Definition of simple machine, velocity ratio of simple and compound gear train.
			Explain simple & compound lifting machine, define M.A, V.R. & Efficiency.
	22/04/2024	1	State the relation between them, State Law of Machine, Reversibility of Machine, and Self-Locking Machine.
	24/04/2024	1	single purchase crab winch & double purchase crab winch

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	25/04/2024	1	Worm & Worm Wheel, Screw Jack
	29/04/2024	1	5.3. Types of hoisting machine-like derricks etc. Their use and working principle.
14 TH	30/04/2024	1	Class Test-02
	02/05/2024	1	6. DYNAMICS 6.1 Kinematics & Kinetics, Principles of Dynamics, Newton's Laws of Motion,
15 TH			Motion of Particle acted upon by a constant force, Equations of motion, D'Alembert's Principle
	06/05/2024	1	6.2 Work, Power, Energy & its Engineering Applications,
	07/05/2024	1	Kinetic & Potential energy & its application
	08/05/2024	1	6.3 Momentum & impulse, conservation of energy & linear momentum,
16 TH	09/05/2024	1	Collision of elastic bodies, and Coefficient of Restitution.
	13/05/2024	1	Collision of elastic bodies, and Coefficient of Restitution.
	14/05/2024	1	