

BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK



LESSON PLAN

SUBJECT: ENGINEERING MECHANICS
FACULTY: NARESH PRADHAN (PTGF)

ACCADEMIC SESSION: 2023-24
SEMESTER: 2ND
SEC: H

Sd/-
PTGF (MECH. ENGG.)

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LESSON PLAN

DISCIPLINE: CS&IT	SEMESTER: 1 ST (H)		NAME OF THE TEACHING FACULTY: NARESH PRADHAN
SUBJECT: ENGINEERING MECHANICS	NO. OF DAYS/ PER WEEK CLASS ALLOTTED: 04 PERIODS PER WEEK MON-2 nd PERIOD, TUE- 5 th PERIOD, WED- 4 th PERIOD, FRI -1 ST 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.
	02/02/2024	1	Action & Reaction Forces Concept of Free Body Diagram.
	05/02/2024	1	1.3 Resolution of a Force. Definition, Method of Resolution, Types of Component forces, Perpendicular components & non-perpendicular components.
2 ND	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, Polygon law of forces.

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	09/02/2024	1	1.4.3 Resultant of concurrent, non-concurrent & parallel force system by Analytical & Graphical Method.
3 RD	12/02/2024		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
	16/02/2024	1	Couple Definition, S.I. units, measurement of couple, properties of couple.
4 TH	19/02/2024	1	PROBLEMS & PYQ
	20/02/2024	1	2. EQUILIBRIUM 2.1 Definition, condition of equilibrium.
	21/02/2024	1	Analytical & Graphical conditions of equilibrium for concurrent,
	23/02/2024	1	Analytical & Graphical conditions of equilibrium non-concurrent & Free Body Diagram
5 TH	26/02/2024	1	2.2. Lamia's Theorem – Statement,
	27/02/2024	1	Application for solving various engineering problems
	28/02/2024	1	Application for solving various engineering problems
	01/03/2024	1	Class Test-01
6 TH	04/03/2024	1	3. FRICTION
			3.1. Definition of friction, Frictional forces, Limiting frictional force,
	06/03/2024	1	3.1. Definition of friction, Frictional forces, Limiting frictional force.
7 TH	11/03/2024	1	Coefficient of Friction., Angle of Friction & Repose
	12/03/2024	1	Laws of Friction, Advantages & Disadvantages of Friction
	13/03/2024	1	3.2. Equilibrium of bodies on level plane –force applied on horizontal plane (up& down)
	15/03/2024	1	3.2. Equilibrium of bodies on level plane –force applied on inclined plane (up& down)

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	18/03/2024	1	Ladder problem
	19/03/2024	1	Ladder problem
8 TH	20/03/2024	1	Wedge problem.
	22/03/2024	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.
9 TH	27/03/2024	1	4.1 Centroid – Definition, Moment of an area about an axis, Centroid of geometrical figures such as triangles.
	02/04/2024	1	4.1 Centroid – Definition, Moment of an area about an axis, Centroid of geometrical figures such as circles, semicircles.
10 TH	03/04/2024	1	Centroid of quarter circles, Centroid of composite figures.
	05/04/2024	1	Centroid of quarter circles, Centroid of composite figures.
	08/04/2024	1	Moment of Inertia – Definition, Parallel axis Theorems.
	09/04/2024	1	Moment of Inertia – Definition, Perpendicular axis Theorems.
11 TH	10/04/2024	1	Theorems. M.I. of plane lamina & different engineering sections. PROBLEMS & PYQ
	12/04/2024	1	Theorems. M.I. of plane lamina & different engineering sections. PROBLEMS & PYQ
	15/04/2024	1	Theorems. M.I. of plane lamina & different engineering sections. PROBLEMS & PYQ
12 TH	16/04/2024	1	5. SIMPLE MACHINES 5.1 Definition of simple machine, velocity ratio of simple and compound gear train.
	19/04/2024	1	Explain simple & compound lifting machine, define M.A, V.R. & Efficiency.
13 TH	22/04/2024	1	State the relation between them, State Law of Machine, Reversibility of Machine, and Self-Locking Machine.
	23/04/2024	1	5.2. Study of simple machines – simple axle & wheel

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	24/04/2024	1	single purchase crab winch & double purchase crab winch
	26/04/2024	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
	03/05/2024	1	6. DYNAMICS
	06/05/2024	1	6.1 Kinematics & Kinetics, Principles of Dynamics, Newton's Laws of Motion, Motion of Particle acted upon by a constant force, Equations of motion, D'Alembert's Principle
15 TH	07/05/2024	1	6.2 Work, Power, Energy & its Engineering Applications, Kinetic & Potential energy & its application
	08/05/2024	1	
	10/05/2024	1	6.3 Momentum & impulse, conservation of energy & linear momentum,
16 TH	13/05/2024	1	Collision of elastic bodies, and Coefficient of Restitution.
	14/05/2024	1	PYQ discussion