

**Academic Lesson Plan for Engg. Mechanics (Winter-2024)**

Discipline: ETC Engg		Semester: 1st	Name of the teaching faculty: Er. RAJKUMAR PRADHAN
Subject: Engg. Mechanics		No. of days/per week Class Allotted: 4	Semester from: 23/08/2024-25/12/2024 No. of weeks:15
Week	Class day	Theory Topics	
1st	1st	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	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	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	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	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	



GOVERNMENT POLYTECHNIC, BHUBANESWAR

ସରକାରୀ ବହୁବୃତ୍ତି ଅନୁଷ୍ଠାନ , ଭୁବନେଶ୍ୱର

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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	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, ,
	2nd	double purchase crab winch
	3rd	double purchase crab winch- PROBLEM
	4th	Worm & Worm Wheel
15th	1st	Worm & Worm Wheel- PROBLEM
	2nd	Screw Jack
	3rd	Screw Jack- PROBLEM
	4th	Types of hoisting machine like derricks etc, Their use and working principle.