Discipline : **CIVIL ENGG.**	Semester : 2ND	Name of the Teaching Faculty:- S R PRADHAN
Subject: **ENGG. MECHANICS**	No. of days/per week class allotted:**04**	Semester From date : 28**.04.2021** To Date:10**.07.2021** No. of Weeks: **16**
Week	Class Day	Theory Topics
1ST	1ST	Fundamentals. Definitions of Mechanics, Statics, Dynamics, Rigid Bodies,
	2ND	Force System. Definition, Classification of force system according to plane & line of action.
	3RD	Characteristics of Force & effect of Force. Principles of Transmissibility & Principles of Superposition. Action & Reaction Forces & concept of Free Body Diagram.
	4TH	Resolution of a Force. Definition, Method of Resolution, Types of Component forces, Perpendicular components & non-perpendicular components.
2ND	1ST	Composition of Forces. Definition, Resultant Force, Method of composition of forces
	2ND	Analytical Method such as Law of Parallelogram of forces & method of resolution.
	3RD	Graphical Method. Introduction, Space diagram, Vector diagram, Polygon law of forces.
	4TH	Resultant of concurrent, non-concurrent & parallel force system by Analytical & Graphical Method.
3RD	1ST	Moment of Force. Definition, Geometrical meaning of moment of a force, measurement of moment of a force & its S.I units.
	2ND	Classification of moments according to direction of rotation, sign convention,
	3RD	Law of moments, Varignon's Theorem
	4TH	Couple – Definition, S.I. units, measurement of couple
4TH	1ST	properties of couple, simple problems on Force systems
	2ND	Introduction to Equilibrium, Definition, condition of equilibrium
	3RD	Analytical & Graphical conditions of equilibrium for concurrent, non-concurrent & Free Body Diagram.
	4TH	Lami's Theorem – Statement, Application for solving various engineering problems.
5TH	1ST	Revision- CH-1& 2

	2ND	Definition of friction& Frictional forces
	3RD	Define Limiting frictional force & Coefficient of Friction.
	4TH	Define Angle of Friction & Repose & Laws of Friction
6TH	1ST	Advantages & Disadvantages of Friction.
	2ND	Friction problem
	3RD	Friction problem
	4TH	Friction problem
7TH	1ST	Equilibrium of bodies on level plane – Force applied on horizontal plane
	2ND	Problem solved of Force applied on horizontal plane
	3RD	Equilibrium of bodies on level plane – Force applied on inclined plane
	4TH	Problem solved of Force applied on inclined plane
8TH	1ST	Ladder, Wedge Friction
	2ND	Problems solved on Ladder friction
	3RD	Problems solved on Ladder friction
	4TH	Problems solved on wedge friction
9TH	1ST	Revision- CH-3
	2ND	Introduction to centroid and M.I, Lamia's Theorem – Statement, Application for solving various engineering problems.
	3RD	centroid of geometrical figures such as squares, rectangles, triangles, circles, semicircles & quarter circles
	4TH	centroid of composite figures, problems on centroid
10TH	1ST	Moment of Inertia – Definition, Parallel axis & Perpendicular axis Theorems
	2ND	M.I. of plane lamina & different engineering sections.
	3RD	Problems on M.I
	4TH	Problems on M.I
11TH	1ST	Revision- CH-4
	2ND	Definition of simple machine, velocity ratio of simple and compound gear train
	3RD	Explain simple & compound lifting machine
	4TH	Define M.A, V.R.& Efficiency and State the relation between them
12TH	1ST	State Law of Machine, Reversibility of Machine, Self-Locking Machine.
	2ND	Study of simple machines – simple axle & wheel
	3RD	Problems solved on simple axle & wheel
	4TH	Discussion about Single purchase crab winch

13TH	1ST	Problem solved on Single purchase crab winch
	2ND	Discussion about double purchase crab winch
	3RD	Problems on double purchase crab winch
	4TH	Discussion of Worm & Worm Wheel
14TH	1ST	Problems on Worm& Worm Wheel
	2ND	Screw Jack
	3RD	Problems solved on screw jack
	4TH	Types of hoisting machine-like derricks etc. Their use and working principle
15TH	1ST	Revision- CH-5
	2ND	Kinematics & Kinetics, Principles of Dynamics, Newton's Laws of Motion
	3RD	Motion of Particle acted upon by a constant force, Equations of motion
	4TH	De-Alembert's Principle, Work, Power, Energy & its Engineering Applications
16TH	1ST	Kinetic & Potential energy & its application, Momentum & impulse, conservation of energy & linear momentum
	2ND	collision of elastic bodies, and Coefficient of Restitution
	3RD	Solving problems
	4TH	Revision- CH-6

Learning Resources:

1. Text Book of Engineering Mechanics – R.S Khurmi (S. Chand).
2. Engineering Mechanics – by A.R. Basu (TMH Publication Delhi)
3. Engineering Machines – Basudev Bhattacharya (Oxford University Press).

FACULTY **HOD** **PRINCIPAL**

MATH & SC DEPT. **GP, PURI**