



UTKAL INSTITUTE OF ENGINEERING & TECHNOLOGY

DISCIPLINE: ALL BRANCH	SEMESTER: 2ND SEM	NAME OF THE TEACHING FACULTY: Er.SNEHASIS DAS		
SUBJECT: ENGINEERING MECHANICS	No of Days/Per week class allotted: 4 Class P/W(60)	Semester From Date:20/03/2023		
		To Date:27/06/2023		
		No. Of Weeks: 15		
WEEK	CLASS DAY	THEORY TOPICS	REMARKS	
1 st	1 st	Fundamentals. Definitions of Mechanics, Statics	Date	Dean/Principal
	2 nd	Statics, Dynamics, Rigid Bodies		
	3 rd	Force System. Definition		
	4 th	Definition, Classification of force system according to plane & line of action		
2 nd	1 st	Characteristics of Force & effect of Force. Principles of Transmissibility & Principles of Superposition. Action & Reaction Forces & concept of Free Body Diagram		
	2 nd	Resolution of a Force. Definition		
	3 rd	Method of Resolution		
	4 th	Types of Component forces, Perpendicular components & non-perpendicular components		
3 rd	1 st	Composition of Forces. Definition, Resultant Force		
	2 nd	Method of composition of forces, such as 1.4.1 Analytical Method such as Law of Parallelogram of forces & method of resolution		
	3 rd	Graphical Method. Introduction, Space diagram, Vector diagram, Polygon law of forces.		
	4 th	Resultant of concurrent, non-concurrent & parallel force system by Analytical & Graphical Method.		
4 th	1 st	Moment of Force. Definition, Geometrical meaning of moment of a force, measurement of moment of a force & its S.I units		
	2 nd	Classification of moments according to direction of rotation, sign convention, Law of moments, Varignon's Theorem, Couple – Definition, S.I. units, measurement of couple, properties of couple		
	3 rd	EQUILIBRIUM 2.1 Definition		

	4 th	condition of equilibrium		
5 th	1 st	Analytical & Graphical conditions of equilibrium for concurrent		
	2 nd	non-concurrent & Free Body Diagram		
	3 rd	Lamia's Theorem		
	4 th	Lamia's Theorem – Statement		
6 th	1 st	Application for solving various engineering problems		
	2 nd	DOUBT CLEAR CLASS		
	3 rd	Definition of friction		
	4 th	Frictional forces		
7 th	1 st	Limiting frictional force		
	2 nd	Coefficient of Friction		
	3 rd	Angle of Friction & Repose		
	4 th	Laws of Friction		
8 th	1 st	Advantages & Disadvantages of Friction.		
	2 nd	Equilibrium of bodies on level plane		
	3 rd	Equilibrium of bodies on level plane – Force applied on horizontal & inclined plane (up & down)		
	4 th	Ladder, Wedge Friction		
9 th	1 st	CENTROID & MOMENT OF INERTIA		
	2 nd	Centroid – Definition		
	3 rd	Moment of an area about an axis		
	4 th	centroid of geometrical figures such as squares		
10 th	1 st	rectangles		
	2 nd	triangles		
	3 rd	circles		
	4 th	semicircles & quarter circles		
11 th	1 st	centroid of composite figures		
	2 nd	Moment of Inertia		
	3 rd	Moment of Inertia – Definition, Doubt Clear Class		
	4 th	Parallel axis & Perpendicular axis Theorems		
12 th	1 st	M.I. of plane lamina & different engineering sections.		
	2 nd	Assignment		
	3 rd	Definition of simple machine		
	4 th	DOUBT CLEAR CLASS		
13 th	1 st	velocity ratio of simple and compound gear train		
	2 nd	explain simple & compound lifting machine, define M.A, V.R. & Efficiency & State the relation between them		
	3 rd	State Law of Machine, Reversibility of Machine, Self Locking Machine		
	4 th	Study of simple machines – simple axle & wheel		
	1 st	single purchase crab winch & double purchase crab winch, Worm & Worm Wheel, Screw Jack.		

14 th	2 nd	Types of hoisting machine like derricks etc, Their use and working principle. No problems		
	3 rd	Kinematics & Kinetics, Principles of Dynamics		
	4 th	Newton's Laws of Motion, Motion of Particle acted upon by a constant force, Equations of motion, DeAlembert's Principle		
15 th	1 st	Work, Power, Energy & its Engineering Applications		
	2 nd	Kinetic & Potential energy & its application.		
	3 rd	Momentum & impulse		
	4 th	conservation of energy & linear momentum, collision of elastic bodies, and Coefficient of Restitution.		

Onehasi Das

HOD

Chittaranjan Parida

DEAN

[Signature]

PRINCIPAL