

Discipline: Mechanical Engg.	Semester:4 th	Name of the Teaching Faculty: BANESWAR MUNDA Designation: Senior Lecturer	
Subject: Theory of Machines (Th.1)	No. of days/week class allotted:03	Semester From date: 22.12.2025	To date: 18.04.2026
Week	Class Day	Theory/Practical Topics	
	UNIT- I	Simple Mechanism	
1 ST	1 st	Link , kinematic pair and types (Lower pair and higher pair),	
	2 nd	Mechanism and machine, kinematic chain, Inversion	
	3 rd	Inversion of four bar link mechanism	
2 ND	1 st	Concept , definition and application of Cam and followers.	
	2 nd	Classification of Cam and followers.	
	3 rd	Different follower motions and their displacement diagrams like uniform velocity,	
3 RD	1 st	SHM, uniform acceleration and Retardation;	
	UNIT- II	Power Transmission	
	2 nd	Types of Drives – Belt, Chain, Rope, Gear drives & their comparison; Belt Drives - flat belt, V- belt.	
4 TH	3 rd	Application of belt drive Material for flat and V-belt; Angle of lap, Belt length. Slip and Creep;	
	1 st	Determination of Velocity Ratio, Ratio of tight side and slack side tension; Centrifugal tension and Initial tension	
	2 nd	Condition for maximum power transmission (Simple numericals);	
5 TH	3 rd	Chain Drives – Advantages & Disadvantages; Selection of Chain & Sprocket wheels; Methods of lubrication;	
	1 st	Gear Drives – Spur gear nomenclature and terminology	
	2 nd	Types of gears and gear trains, their selection for different applications;	
6 TH	3 rd	Train value & Velocity ratio for compound, reverted gear train;	
	1 st	Velocity ratio simple epicyclic gear train; Methods of lubrication	
	2 nd	; Law of gearing ,Rope Drives – Types, applications,	
7 TH	3 rd	Advantages & limitations of Steel ropes.	
	UNIT- III	Flywheel and Governors	
	1 st	Flywheel - Concept, function and application of flywheel	
8 TH	2 nd	Turning moment diagram for single cylinder 4-Stroke I.C.	
	3 rd	Coefficient of fluctuation of energy and its significance;	
	1 st	Coefficient of fluctuation of speed and its significance;	
9 th	2 nd	Governors - Types and explanation with neat sketches of Centrifugal, Watt	
	3 rd	Explanation with neat sketches of the governor (Watt and Porter)	
	1 st	Concept, function and applications	
10 TH	2 nd	Terminology of Governors (sensitivity, stability and isochronisms)	
	3 rd	Simple numericals on Watt and Porter Governor.	
	1 st	Comparison between Flywheel and Governor	
	UNIT- IV	Brakes, Dynamometers, Clutches & Bearings:	
	2 nd	Function of brakes and dynamometers; Types of brakes and Dynamometers; Comparison between brakes and dynamometers;	
	3 rd	Construction and working of i) shoe brake, ii) Band Brake,	

11 TH	1 st	Numerical problems to find braking force and braking torque for shoe & band brakes
	2 nd	Concept of Self Locking & Self energizing brakes
	3 rd	Construction and working of i) Rope Brake Dynamometer, ii) Hydraulic Dynamometer
12 th	1 st	Clutches- Uniform pressure and Uniform Wear theories; Function of Clutch and its application
	2 nd	Construction and working of i) Single plate clutch, ii) Multiplate clutch,
	3 rd	Construction and working of Centrifugal Clutch , Cone clutch and Diaphragm clutch. (Simple numericals on single and Multiplate clutch)
13 TH	1 st	Bearings – i) Simple Pivot, ii) Collar Bearing, iii) Conical pivot.
	2 nd	Torque & power lost in friction (no derivation). Simple numericals.
	UNIT- V	Balancing and Vibration
14 th	3 rd	Concept of balancing; Balancing of single rotating mass
	1 st	Graphical method for balancing of several masses revolving in same plane;
	2 nd	Graphical method for balancing of several masses revolving in same plane;
15 th	3 rd	Concept and terminology used in vibrations
	1 st	Causes of vibrations in machines; their harmful effects and remedies.
	2 nd	Numericals on all units.
	3 rd	Revision of full subject.
TOTAL NO. OF CLASSES=45		

Prepared By:

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