GANAPATI INSTITUTE OF ENGINEERING AND TECHNOLOGY (POLYTECHNIC),JAGATPUR,CUTTACK
DEPARTMENT OF MECHANICAL ENGINEERING.

LESSON PLAN

DISCIPLINE: MECHANICAL ENGG.	**SEMESTER-** 4TH	**NAME OF THE TECHING FACULTY:** Er.PRAVAT KUMAR SWAIN
SUBJECT : THEORY OF MACHINES & MECHANISM [MEPC202 **(TH:1)**]	**NO OF DAYS PER WEEK CLASS ALLOTED:**03	**SEMESTER FROM DATE: 22/12/2025 TO 18/04/2026 NO OF WEEKS:-15**

WEEK	CLASS DAY	THEORY TOPICS
1ST	1ST	Unit: 1 • Simple mechanism: Link ,kinematic pair and types (Lower pair and higher pair) .
	2ND	• kinematic chain, mechanism, Inversion, four bar link mechanism and its inversion .
	3RD	• Cams and Followers: Concept.
2ND	1ST	• Definition and application of Cams and Followers.
	2ND	• Classification of Cams and Followers.
	3RD	• Different follower motions and their displacement diagrams like uniform velocity.
3RD	1ST	• SHM, uniform acceleration and Retardation.
	2ND	Unit: 2 • Power Transmission: Types of Drives – Belt, Chain, Rope, Gear drives & their comparison
	3RD	• Belt Drives - flat belt, V– belt & its applications
4TH	1ST	• Material for flat and V-belt; Angle of lap, Belt length. Slip and Creep
	2ND	• Determination of Velocity Ratio, Ratio of tight side and slack side tension
	3RD	• Centrifugal tension and Initial tension; Condition for maximum power transmission (Simple numerical);
5TH	1ST	• Chain Drives – Advantages & Disadvantages
	2ND	• Selection of Chain & Sprocket wheels; Methods of lubrication
	3RD	• Gear Drives – Spur gear terminology; Types of gears and gear trains their selection for different applications
6TH	1ST	• Train value & Velocity ratio for compound reverted and simple epicyclic gear train
	2ND	• Methods of lubrication; Law of gearing; Rope Drives – Types, applications, advantages & limitations of Steel ropes.
	3RD	• CLASS TEST 1
7TH	1ST	Unit: 3 • Flywheel and Governors: Flywheel - Concept
	2ND	• function and application of flywheel with the help of turning moment diagram for single cylinder 4-Stroke I.C. Engine (no Numerical);
	3RD	• Coefficient of fluctuation of energy,
8TH	1ST	• Coefficient of fluctuation of speed and its significance
	2ND	• Governors - Types and explanation with neat sketches (Centrifugal, Watt and Porter)
	3RD	• Governor Concept, function and applications Governor. Comparison between Flywheel
9TH	1ST	• Terminology of Governors (sensitivity, stability and

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		isochronisms)
	2ND	• Simple numerical on Watt and Porter Governor.
	3RD	• Comparison between Flywheel and Governor
10TH	1ST	• CLASS TEST
	2ND	Unit: 4 • Brakes, Dynamometers, Clutches & Bearings
	3RD	• Function of brakes and dynamometers;
11TH	1ST	• Types of brakes and Dynamometers;
	2ND	• Comparison between brakes and dynamometers; Construction and working of i) shoe brake, ii) Band Brake,
	3RD	• Numerical problems to find braking force and braking torque for shoe & band brakes;
12TH	1ST	• Concept of Self Locking & Self energizing brakes Construction and working of i) Rope Brake Dynamometer, ii) Hydraulic Dynamometer Clutches- Uniform pressure and Uniform Wear theories
	2ND	• Function of Clutch and its application; Construction and working of i) Single plate clutch, ii) Multiplate clutch
	3RD	• Function of Clutch and its application; Construction and working of iii) Centrifugal Clutch iv) Cone clutch and
13TH	1ST	• Function of Clutch and its application; Construction and working of v) Diaphragm clutch. Simple numerical on single and Multiplate clutch
	2ND	• Bearings – i) Simple Pivot, ii) Collar Bearing, iii) Conical pivot. Torque & power lost in friction (no derivation). Simple numerical.
	3RD	Unit: 5 • Balancing & Vibrations: Concept of balancing
14TH	1ST	• Balancing of single rotating mass
	2ND	• Graphical method for balancing of several masses revolving in same plane
	3RD	• Concept and terminology used in vibrations,
15TH	1ST	• Causes of vibrations in machines
	2ND	• Harmful effects and remedies.
	3RD	• CLASS TEST

REFERENCES BOOKS:

1. Theory of machines – S.S .Rattan ,Tata McGraw-Hill publications.
2. Theory of machines – R.K.Bansal ,Laxmi publications
3. Theory of machines – R.S. Khurmi & J.K.Gupta , S.Chand publications.
4. Dynamics of Machines – J B K Das, Sapna Publications.
5. Theory of machines – Jagdishlal, Bombay Metro – Politan book Ltd.

23/12/25

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