Orissa School of Mining Engineering Keonjhar

Department of Mechanical Engineering

Lesson Plan w.e.f 22.12.2025- 18.04.2026

Subject: Theory of Machines & Mechanisms			
Discipline: **Mechanical Engineering**		Name of the Faculty: *Dr .Niharika Mohanta*	
Course Code:	**TH-1**	Semester:	**4TH**
Total Periods:	**45**	Examination:	**2026(SUMMER)**
Theory Periods:	4P/W	Class Test:	30
Maximum Marks:	**100**	End Semester Examination:	70

Week	No of availability classes	Class Day	Theory Topics
1st	02	22/12/25	**UNIT I: Simple mechanism,** Link ,kinematic pair and types (Lower pair and higher pair)
		30/12/25	Kinematic Chain, Types
			Mechanism, Machine, Structure, Difference
2nd	02	01/01/26	Four bar mechanism, Grashof's equation
		01/01/26	Inversion, Inversion of Four bar chain mechanism
3rd	03	6/01/26	Inversion of Single Slider crank mechanism
		8/01/26	Inversion of Double Slider crank mechanism
		8/01/26	Definition and application of Cams and Followers;
4th	03	13/01/26	Classification of Cams and Followers;
		15/01/26	Different follower motions and their displacement diagrams like uniform velocity
		15/01/26	SHM, uniform acceleration and Retardation;
5th	03	20/01/26	**UNIT II Power Transmission** Types of Drives – Belt, Chain, Rope, Gear drives & their comparison;
		22/01/26	Belt Drives - flat belt, V– belt & its applications; Material for flat and V-belt
		22/01/26	Length of open belt drive with and without slip
6th	03	27/01/26	Length of cross belt drive, with and without slip
		27/01/26	Determination of Velocity Ratio, Ratio of tight side and slack side tension
		29/01/26	Numerical
7th	04	04/02/26	Centrifugal tension and Initial tension;
		04/02/26	Condition for maximum power transmission (Simple numerical)
		07/02/26	Chain Drives – Advantages & Disadvantages;
		07/02/26	Selection of Chain & Sprocket wheel Methods of lubrication;
8th	02	11/02/26	Gear Drives – Spur gear terminology

		11/02/26	Types of gears and gear trains, their selection for different applications
9th	04	18/02/26	Train value & Velocity ratio for simple and compound gear train;
		18/02/26	Train value & Velocity ratio for reverted gear train;
		21/02/26	Train value & Velocity ratio for, reverted and simple epicyclic gear train;
		21/02/26	Methods of lubrication; Law of gearing,
9th	02	25/02/26	Rope Drives – Types, applications, advantages & limitations of Steel ropes.
		25/02/26	**UNIT III: Flywheel and Governors:** Flywheel - Concept, function and application of flywheel
10th	02	07/03/26	application of flywheel with the help of turning moment diagram for single cylinder 4-Stroke I.C. Engine
		07/03/26	Coefficient of fluctuation of energy, Coefficient of fluctuation of speed and its significance
11th	02	11/03/26	Governors - Concept, function ,Types and explanation with neat sketches of Centrifugal Governor,
		11/03/26	Working of watt and Porter Governor
12th	02	18/03/26	Simple numerical on Watt and Porter Governor.
		18/03/26	Applications & Terminology of Governors (sensitivity, stability and isochronism)
13th	02	25/03/26	Comparison between Flywheel and Governor
		25/03/26	**UNIT IV: Brakes, Dynamometers, Clutches & Bearings: Introduction**
14th	02	04/04/26	Function of brakes and dynamometers; Types of brakes and Dynamometers;
		04/04/26	Comparison between brakes and dynamometers;
15th	02	08/04/26	Construction and working of i) shoe brake, ii) Band Brake,
		08/04/26	Numerical problems to find braking force and braking torque for shoe & band brakes; Concept of Self Locking & Self energizing brakes
16th	04	15/04/26	Construction and working of i) Rope Brake Dynamometer, ii) Hydraulic Dynamometer.
		15/04/26	Clutches- Uniform pressure and Uniform Wear theories;
		18/04/26	Function of Clutch and its application; Construction and working of i) Single plate clutch,
		18/04/26	Function of Clutch and its application; Construction and working of ii) Multiplate clutch
		EXTRA	iii) Centrifugal Clutch
		EXTRA	iv) Cone clutch and v) Diaphragm clutch.
		EXTRA	(Simple numerical on single and Multiplate clutch
		EXTRA	Bearings – i) Simple Pivot. ii) Collar Bearing Torque & power lost in friction (no derivation). Simple numerical.
		EXTRA	Bearing ii) Collar Bearing. Torque & power lost in friction (no derivation). Simple numerical.
		EXTRA	Bearings –iii) Conical pivot. Torque & power lost in friction (no derivation). Simple numerical.
		EXTRA	**UNIT V Balancing & Vibrations:** Concept of balancing; Balancing of single rotating mass;
		EXTRA	Graphical method for balancing of several masses revolving in same plane;
		EXTRA	Concept and terminology used in vibrations,
		EXTRA	Causes of vibrations in machines, their harmful effects and remedies.

22/12/26

Prepared by

Dr Niharika Mohanta

22.12.25

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