

Lesson Plan on  
(TH-1) THEORY OF MACHINE  
(4th sem)

Prepared by  
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# GOVERNMENT POLYTECHNIC, PURI

## DEPARTMENT OF MECHANICAL ENGINEERING

Discipline: MECHANICAL ENGG	Semester: 4TH	Name of the Teaching Faculty: MR BISWAJIT NAYAK, PTGF IN MECH. ENGG.	
Subject: THEORY OF MACHINES (TH.1)	No. of days/per week class allotted: 04	Semester From date: 16.01.2024	To Date: 26.04.2024
PRE-REQUISITE		Basic knowledge about machine, clutch, brakes, governors, flywheels, friction, power transmission and vibrations.	
COURSE OUTCOMES		CO1: Understanding machine system consisting of different link assemblies as components. CO2: Comprehending Working principle of machine components such as clutch, brakes, bearings based on friction. CO3: Comprehending working principles related to power transmission systems and predicting the work involved and efficiency. CO4: Comprehending working principle in speed and torque regulating devices such as governor and flywheels. CO5: Determination of amount and position of masses required towards static and dynamic balancing. CO6: Comprehending types and causes of vibration in machines and predicting remedial measures.	
Week	Class Day	Theory / Practical Topics	DELIVERY METHOD
1ST	1ST	Simple mechanism - Introduction.	Whiteboard
	2ND	Link ,kinematic chain, mechanism, machine.	Whiteboard
	3RD	Inversion, four bar link mechanism and its inversion.	Whiteboard
	4TH	Inversion, four bar link mechanism and its inversion.	Whiteboard
2ND	1ST	Lower pair and higher pair.	Whiteboard
	2ND	Cam and followers.	Whiteboard
	3RD	Friction - Introduction.	Whiteboard
	4TH	Friction between nut and screw for square thread, screw jack.	Whiteboard
3RD	1ST	Bearing and its classification, Description of roller, needle roller& ball bearings.	Whiteboard
	2ND	Bearing and its classification, Description of roller, needle roller& ball bearings.	Whiteboard
	3RD	Torque transmission in flat pivot& conical pivot bearings.	Whiteboard
	4TH	Torque transmission in flat pivot& conical pivot bearings.	PPT
4TH	1ST	<b>QUIZ &amp; ASSIGNMENT-I</b>	GOOGLE FORMS
	2ND	Flat collar bearing of single and multiple types.	PPT
	3RD	Torque transmission for single and multiple clutches.	Whiteboard
	4TH	Torque transmission for single and multiple clutches.	Whiteboard
5TH	1ST	Working of simple frictional brakes.	Whiteboard
	2ND	Working of Absorption type of dynamometer.	Whiteboard
	3RD	<b>QUIZ &amp; ASSIGNMENT-II</b>	GOOGLE FORMS
	4TH	Power Transmission - Introduction.	PPT
6TH	1ST	Concept of power transmission.	Whiteboard
	2ND	Type of drives, belt, gear and chain drive.	Whiteboard
	3RD	Computation of velocity ratio, length of belts (open and cross)with and without slip.	PPT
	4TH	Ratio of belt tensions, centrifugal tension and initial tension.	Whiteboard
7TH	1ST	Power transmitted by the belt. Determine belt thickness and width for given permissible stress for open and crossed belt considering centrifugal tension.	Whiteboard
	2ND	<b>QUIZ &amp; ASSIGNMENT-III</b>	GOOGLE FORMS
	3RD	Governors and Flywheel - Introduction.	Whiteboard
	4TH	Function of governor	Whiteboard
	1ST	Classification of governor	Whiteboard

8TH	2ND	Working of Watt, Porter, Proel and Hartnell governors.	PPT
	3RD	Working of Watt, Porter, Proel and Hartnell governors.	Whiteboard
	4TH	Conceptual explanation of sensitivity, stability and isochronisms.	Whiteboard
9TH	1ST	Conceptual explanation of sensitivity, stability and isochronisms.	Whiteboard
	2ND	Function of flywheel.	PPT
	3RD	Comparison between flywheel & governor.	Whiteboard
	4TH	Comparison between flywheel & governor.	PPT
10TH	1ST	Fluctuation of energy and coefficient of fluctuation of speed.	Whiteboard
	2ND	QUIZ & ASSIGNMENT-IV	
	3RD	Balancing of Machine - Introduction	GOOGLE FORMS
	4TH	Concept of static and dynamic balancing.	Whiteboard
11TH	1ST	Static balancing of rotating parts.	Whiteboard
	2ND	Static balancing of rotating parts.	Whiteboard
	3RD	Principles of balancing of reciprocating parts.	Whiteboard
	4TH	QUIZ & ASSIGNMENT-V	
12TH	1ST	Causes and effect of unbalance.	PPT
	2ND	Difference between static and dynamic balancing.	Whiteboard
	3RD	Vibration of machine parts - Introduction.	Whiteboard
	4TH	Introduction to Vibration and related terms (Amplitude, time period and frequency, cycle)	Whiteboard
13TH	1ST	Battery for Electric Vehicles, Battery types and fuel cells.	Whiteboard
	2ND	Classification of vibration.	Whiteboard
	3RD	Basic concept of natural, forced & damped vibration	PPT
	4TH	Torsional and Longitudinal vibration.	Whiteboard
14TH	1ST	Torsional and Longitudinal vibration.	Whiteboard
	2ND	Causes & remedies of vibration.	Whiteboard
	3RD	QUIZ & ASSIGNMENT-VI	
	4TH	REVISION	
15TH	1ST	REVISION	
	2ND		
	3RD		
	4TH		

#### LEARNING RESOURCES:

01. Text Book Of Theory Of Machine By R.S Khurmi, S Chand Publisher.
02. Text Book Of Theory Of Machine By R.k. Rajput, S Chand Publisher.
03. Text Book Of Theory Of Machine By P.L. Balany, Dhanpat Rai Publisher.
04. Text Book Of Theory Of Machine By Thomas Bevan, Pearson Publisher.

#### WEBSITE RESOURCES:

- <https://www.youtube.com/watch?v=LR-fKpvSpzo&list=PLiSPNzs4fD9s1vyDVPWYHhQRrouo2J304>
- [https://www.youtube.com/watch?v=pXQCy4RNJ5q&list=PLNyPK\\_sfNdSSmNpaWkitGnf8cQO7we\\_G4](https://www.youtube.com/watch?v=pXQCy4RNJ5q&list=PLNyPK_sfNdSSmNpaWkitGnf8cQO7we_G4)

Sign. Of Concerned Faculty

Principal  
G.P. Puri

Sign. Of HOD