

GOVT POLYTECHNIC , NABARANGPUR .
LESSON PLAN FOR THEORY OF MACHINES (Th. 1)

Discipline: Mechanical Engineering	Semester: 4TH	Name of the Teaching Faculty: DEEPAK RANJAN PATTAIAK (PTGF)
Subject: THEORY OF MACHINES	No. of days per week class allotted: 4	Semester From Date : 15.07.21 to Date : 15.08.21 No. of Weeks: 15
Week	Class Day	Theory
1st		1. SIMPLE MECHANISM
	1st	1.1. Link, kinematic chain , mechanism , machine
	2nd	1.2. inversion , four bar link mechanism and its inversion
	3rd	1.3. lower pair and higher pair
	4th	1.4. cam and follower
		2. FRICTION
2nd	1st	2.1. Friction between nut and screw for square thread , screw jack 2.2. bearing and its classification , description of roller, ball bearing
	2nd	2.3. torque transmission in conical and flat pivot and conical pivot bearings
	3rd	2.4. flat collar bearings of single and multiple types
	4th	2.5 . torque transmission for single and multiple clutches , working of simple frictional brakes
		3. POWER TRANSMISSION
3rd	1st	3.1. concept of power transmission
	2nd	3.2. types of drives - belt , rope and chain drive
	3rd	3.3. computation of velocity ratio, length of belts (open and cross), 3.4 . ratio of belt tensions, centrifugal tensions
	4th	3.5. power transmission by the belt , 3.6. determination of belt thickness and width
4th	1st	3.7. v-belts & v belt pulleys 3.8. concept of crowning of pulleys
	2nd	3.9. gear drives and its terminologies
	3rd	3.10. gear trains , working principles of simple , compound , reverted and epicyclic gear trains
	4th	4. GOVERNORS AND FLYWHEEL 4.1 function of governor , 4.2. classification of governor
5th	1st	4.3. working of watt , porter , proel and Hartnell governor
	2nd	4.4. sensitivity , stability and isochronisms 4.5 . concept of function of flywheel
	3rd	4.6. comparison between flywheel and governor
	4th	4.9. fluctuation of energy & coefficient of fluctuation of speed
		5. BALANCING OF MACHINE
6th	1st	5 .1. concept of static and dynamic balancing
	2nd	5 . 2 static balancing of rotating parts(continued)
	3rd	solved problems on gear and gear drives
7th	1st	solved problems on power transmission through belt drives , ratio of belt tensions , length of belts
	2nd	5.2 static balancing of rotating parts (completed)
	3rd	5.3 principles of balancing of reciprocating parts (continued.)
	4th	5.3 principles of balancing of reciprocating parts
8th	1st	5 .4 causes and effects of unbalance
	2nd	5 . 5 static and dynamic balancing
	3rd	differences between static and dynamic balancing
	4th	solved problems on balancing of machine parts
		6 . VIBRATION OF MACHINE PARTS
9th	1st	6.1 Introduction to vibration
	2nd	6 . 1.1 terms related to vibration (amplitude , time period , frequency , cycle)
	3rd	6 . 2 classification of vibration(cont.)
	4th	6 . 2 classification of vibration
10th	1st	6 . 3 concept of natural vibration (cont.)
	2nd	6 . 3 concept of natural vibration
	3rd	6 . 3.2 forced vibration (cont.)
	4th	6 . 3.2 solved problems on forced vibration with illustrations
		6 . VIBRATION OF MACHINE PARTS (CONT.)
11th	1st	6.3.3 CONCEPT OF DAMPED VIBRATION(CONT.)
	2nd	6.3.3 CONCEPT OF DAMPED VIBRATION
	3rd	6.3 damping and its need

	1st	6.5 longitudinal vibration	
	2nd	6.5.1 solved numericals on torsional and longitudinal vibrations	
	3rd	6.5.2 differences between torsional and longitudinal vibrations	
	4th	6.6 causes and remedies of vibrations	
13th	1st	solved numericals on damped vibrations	
	2nd	solved numericals on natural vibrations	
		PRACTICE AND DOUBT CLEARING SESSIONS	
	3rd	solved problems on lower and higher pair , simple mechanism , grubler's equation	
	4th	solved problems on torque transmission in flat pivot and conical pivot bearing	
14th	1st	basic gear nomenclature	
	2nd	problems on velocity ratio , length of belts (OPEN AND CROSS BELT DRIVE)	
	3rd	problems on power transmission by the belt	
	4th	differences between various types of governors	
15th	1st	basic differences between a flywheel and a governor, solved numericals	
	2nd	revision on epicyclic gear train , numericals	

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Debaraj Ranjan Pathnayak