Discipline: MechanicalEngineering	**Semester: 4TH**
Subject: THEORY OF MACHINES	**No. of days per week class allotted: 4**
Week	**Class Day**
1st	
	1st
	2nd
	3rd
	4th
2nd	1st
	2nd
	3rd
	4th
3rd	1st
	2nd
	3rd
	4th
4th	1st
	2nd
	3rd
	4th
5th	1st
	2nd
	3rd
	4th
6th	1st
	2nd
	3rd
7th	1st
	2nd
	3rd
	4th
8th	1st

	2nd
	3rd
	4th
9th	1st
	2nd
	3rd
	4th
10th	1st
	2nd
	3rd
	4th
11th	1st
	2nd
	3rd
	4th
12th	1st
	2nd
	3rd
	4th
13th	1st
	2nd
	3rd
	4th
14th	1st
	2nd
	3rd
	4th
15th	1st
	2nd

SIGNATURE OF THE FACUL

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

Name of the Teaching Faculty: DEEPAK RANJAN PATTNAIK(PTGF)
Semester From Date : …….. to Date: ……..
No. of Weeks: 15
Theory
1. SIMPLE MECHANISM
1.1. Link, kinematic chain , mechanism , machine
1.2. inversion , four bar link mechanism and its inversion
1.3. lower pair and higher pair
1.4.cam and follower
2 . FRICTION
2.1. Friction between nut and screw for square thread , screw jack
2.2. bearing and its classification , description of roller,ball bearing
2.3. torque transmission in conical and flat pivot and conical pivot bearings
2.4. flat collar bearings of single and multiple types
2.5 . torque transmission for single and multiple clutches , working of simple frictional brakes
3. POWER TRANSMISSION
3.1. concept of power transmission
3.2. types of drives - belt , rope and chain drive
3.3. computation of velocity ratio, length of belts (open and cross), 3.4 . ratio of belt tensions, centrifugal tensions
3.5. power transmission by the belt , 3.6. determination of belt thickness and width
3.7. v-belts & v belt pulleys 3.8. concept of crowning of pulleys
3.9. gear drives and its terminologies
3.10. gear trains , working principles of simple , compound , reverted and epicyclic gear trains
4. GOVERNORS AND FLYWHEEL 4.1 function of governor , 4.2. classification of governor
4.3. working of watt , porter , proel and Hartnell governor
4.4. sensitivity ,stability and isochronisms 4.5 . concept of function of flywheel
4.6. comparison between flywheel and governor
4.9. fluctuation of energy & coefficient of fluctuation of speed
5. BALANCING OF MACHINE
5 .1. concept of static and dynamic balancing
5 . 2 static balancing of rotating parts(continued)
solved problems on gear and gear drives
solved problems on power transmission through belt drives , ratio of belt tensons ,length of belts
5.2 static balancing of rotating parts (completed)
5.3 principles of balancing of reciprocating parts (continued.)
5.3 principles of balancing of reciprocating parts
5 .4 causes and effects of unbalance

5 . 5 static and dynamic balancing
differences between static and dynamic balancing
solved problems on balancing of machine parts
6 . VIBRATION OF MACHINE PARTS
6.1 Introduction to vibration
6 . 1.1 terms related to vibration (amplitude , time period , frequency , cycle)
6 . 2 classification of vibration(cont.)
6 . 2 classification of vibration
6 . 3 concept of natural vibration (cont.)
6 . 3 concept of natural vibration
6 . 3.2 forced vibration (cont.)
6 . 3.2 solved problems on forced vibration with illustrations
6 . VIBRATION OF MACHINE PARTS (CONT.)
6.3.3 CONCEPT OF DAMPED VIBRATION(CONT.)
6.3.3 CONCEPT OF DAMPED VIBRATION
6.3 damping and its need
6.4 torsional vibration
6.5 longitudianl vibration
6.5.1 solved numericals on torsional and longitudianal vibrations
6.5.2. differences between torsional and longitudianl vibrations
6.6 causes and remedies of vibrations
solved numericals on damped vibrations
solved numericals on natural vibrations
PRACTICE AND DOUBT CLEARING SESSIONS
solved problems on lower and higher pair , simple mechanism , grubler's equation
solved problems on torque transmission in flat pivot and conical pivot bearing
basic gear nomenclature
problems on velocity ratio , length of belts (OPEN AND CROSS BELT DRIVE)
problems on power transmission by the belt
differences between various types of governors
basic differences between a flywheel and a governor, solved numericals
revision on epicyclic gear train , numericals

.TY CONCERNED PRINCIPAL , GPN H.O.D , MECHANICAL

Discipline: Civil Engineering	**Semester: 3rd**
Subject: FLUID MECHANICS & HYDRAULIC MACHINES (CET 302)	**No. of days/ per week class allotted: 4**
Week	**Class Day**
1st	1st
	2nd
	3rd
	4th
2nd	1st
	2nd
	3rd
	4th
3rd	1st
	2nd
	3rd
	4th
4th	1st
	2nd
	3rd
	4th
5th	1st
	2nd
	3rd
	4th
6th	1st
	2nd
	3rd
	4th
7th	1st
	2nd

	3rd
	4th
8th	1st
	2nd
	3rd
	4th
9th	1st
	2nd
	3rd
	4th
10th	1st
	2nd
	3rd
	4th
11th	1st
	2nd
	3rd
	4th
12th	1st
	2nd
	3rd
	4th
13th	1st
	2nd
	3rd
	4th
14th	1st
	2nd
	3rd

	4th
15th	1st
	2nd
	3rd
	4th

LESSON PLAN

Name of the Teaching Faculty: GOURANGA CHARAN PRADAHAN

Semester From Date : **to Date:**

No. of Weeks: 15

Theory/ Practical Topics
1.0 HYDROSTATICS:
1.1 Properties of fluid: density, specific gravity
1.1 Properties of fluid: density, specific gravity
1.1 Properties of fluid: density, specific gravity
1.1 Properties of fluid: surface tension, capillarity
1.1 Properties of fluid: surface tension, capillarity
1.1 Properties of fluid: viscosity and their uses
1.1 Properties of fluid: viscosity and their uses
1.2 Pressure and its measurements: intensity of pressure,
1.2 Pressure and its measurements: atmospheric pressure,
1.2 Pressure and its measurements: gauge pressure,
1.2 Pressure and its measurements: absolute pressure and vacuum pressure
1.2 Pressure and its measurements:absolute pressure and vacuum pressure; relationship between atmospheric pressure,
1.2 Pressure and its measurements:absolute pressure and vacuum pressure; relationship between atmospheric pressure, absolute pressure and gauge pressure; pressure head; pressure gauges
1.2 Pressure and its measurements:absolute pressure and vacuum pressure; relationship between atmospheric pressure, absolute pressure and gauge pressure; pressure head; pressure gauges
1.3 Pressure exerted on an immersed surface: Total pressure, resultant pressure
1.3 Pressure exerted on an immersed surface: Total pressure, resultant pressure
1.3 Pressure exerted on an immersed surface: Total pressure, resultant pressure
1.3 Pressure exerted on an immersed surface: expression for total pressure exerted on horizontal & vertical surface.
1.3 Pressure exerted on an immersed surface: expression for total pressure exerted on horizontal & vertical surface.
1.3 Pressure exerted on an immersed surface: expression for total pressure exerted on horizontal & vertical surface.
Question and Answer Discussion
1.4 Floatation and buoyancy: Archimedes principle.
1.4 Floatation and buoyancy: buoyancy & center of buoyancy.
1.4 Floatation and buoyancy: center of pressure, metacenter, metacentric height, numerical problems.
1.4 Floatation and buoyancy: center of pressure, metacenter, metacentric height, numerical problems.
2.0 KINEMATICS OF FLUID FLOW:
2.1 Basic equation of fluid flow and their application: rate of discharge

2.1 Basic equation of fluid flow and their application: equation of continuity of liquid flow,
2.1 Basic equation of fluid flow and their application: total energy of a liquid in motion- potential, kinetic & pressure
2.1 Basic equation of fluid flow and their application: Bernoulli's theorem and its limitations.
2.1 Basic equation of fluid flow and their application: Practical applications of Bernoulli's equation.
2.2 Flow over Notches: notch
2.2 Flow over Notches: types of notches
2.2 Flow over Notches: discharge through different types of notches and their application.(No Derivation)
2.2 Flow over Notches: discharge through different types of notches and their application.(No Derivation)
2.2 Flow over Notches: discharge through different types of notches and their application.(No Derivation)
2.3 Flow over Weirs: weir and difference with notches,
2.3 Flow over Weirs: weir and difference with notches,
2.3 Flow over Weirs: types of weirs,
2.3 Flow over Weirs: discharge formulae for different types of weirs and their application.(No Derivation)
2.3 Flow over Weirs: discharge formulae for different types of weirs and their application.(No Derivation)
2.4 Types of flow through the pipes: uniform and non uniform.
2.4 Types of flow through the pipes: uniform and non uniform.
2.4 Types of flow through the pipes: laminar and turbulent.
2.4 Types of flow through the pipes: steady and unsteady; Reynold's number and its application
2.4 Types of flow through the pipes: steady and unsteady; Reynold's number and its application
2.5 Losses of head of a liquid flowing through pipes: due to friction(statement of Darcy's equation)
2.5 Losses of head of a liquid flowing through pipes: sudden enlargement.
2.5 Losses of head of a liquid flowing through pipes: sudden contraction.
2.5 Losses of head of a liquid flowing through pipes: change of direction of flow,loss at inlet & exit (No derivation, only statement of formulae & their application),
2.5 Losses of head of a liquid flowing through pipes: total energy lines & hydraulic gradient lines.
2.6 Flow through the Open Channels: Types of channel sections rectangular, trapezoidal and circular.
2.6 Flow through the Open Channels: discharge formulae- Chezy's and Manning's equation.
2.6 Flow through the Open Channels: best economical section.
2.6 Flow through the Open Channels: phenomenon of hydraulic jump(only description and no derivation)
Question and Answer Discussion
3.0 PUMPS:

3.1 Type of pumps
3.2 Centrifugal pump: basic principles, discharge, horse power of pump, efficiency of centrifugal pump, simple numerical problems
3.3 Reciprocating pumps: types, operation, discharge, calculation of horse power, efficiency, simple numerical problems
3.3 Reciprocating pumps: types, operation, discharge, calculation of horse power, efficiency, simple numerical problems
Question and Answer Discussion