

GANAPATI INSTITUTE OF ENGINEERING & TECHNOLOGY(Polytechnic),JAGATPUR,CUTTACK
DEPARTMENT OF MECHANICAL ENGINEERING.

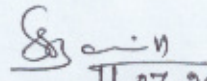
LESSON PLAN-2025 WINTER


Discipline : MECHANICAL ENGG	Semester : 5th	Name of the Teaching Faculty: SUBHRANSU SEKHAR BARIK
Subject: HYDRAULIC MACHINES & INDUSTRIAL FLUID POWER(Th-3)	No. of days/per week class allotted: 04	Semester From date : 14.07.2025 To Date: 15.11.2025 No. of Weeks: 15
Week	Class Day	Theory / Practical Topics
1ST	1ST	HYDRAULIC TURBINES. Definition and classification of hydraulic turbines
	2ND	Construction and working principle of impulse turbine
	3RD	Construction and working principle of impulse turbine
	4TH	Velocity diagram of moving blades, work done and derivation of various efficiencies of impulse turbine.
2ND	1ST	Velocity diagram of moving blades, work done and derivation of Various efficiencies of impulse turbine.
	2ND	Velocity diagram of moving blades, work done and derivation of various efficiencies of Francis turbine.
	3RD	Velocity diagram of moving blades, work done and derivation of various efficiencies of Francis turbine.
	4TH	Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine
3RD	1ST	Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine
	2ND	Numerical on above
	3RD	Numerical on above
	4TH	CLASSTEST
4TH	1ST	Numerical on above
	2ND	Numerical on above
	3RD	Distinguish between impulse turbine and reaction turbine
	4TH	CENTRIFUGAL PUMPS Construction and working principle of centrifugal pumps.
5TH	1ST	work done and derivation of various efficiencies of centrifugal pumps
	2ND	work done and derivation of various efficiencies of centrifugal pumps
	3RD	Numerical on above
	4TH	Numerical on above
6TH	1ST	RECIPROCATING PUMPS Describe construction & working of single acting reciprocating pump.
	2ND	Describe construction & working of double acting reciprocating pump.
	3RD	Derive the formula foe power required to drive the pump (Single acting & double acting).
	4TH	Derive the formula foe power required to drive the pump (Single acting & double acting).
7TH	1ST	Define slip.
	2ND	State positive & negative slip & establish relation between slip & coefficient of discharge.
	3RD	State positive & negative slip & establish relation between Slip & coefficient of discharge.
	4TH	Solve numerical on above

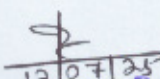
8 TH	1 ST	Solve numerical on above
	2 ND	CLASS TEST
	3 RD	PNEUMATIC CONTROL SYSTEM Elements –filter-regulator-lubrication unit
	4 TH	Pressure control valves
9 TH	1 ST	Pressure relief valves
	2 ND	Pressure regulation valves
	3 RD	Direction control valves 3/2DCV,5/2 DCV,5/3DCV
	4 TH	Direction control valves 3/2DCV,5/2 DCV,5/3DCV
10 TH	1 ST	Direction control valves 3/2DCV,5/2 DCV,5/3DCV
	2 ND	Flow control valves
	3 RD	Throttle valves
	4 TH	ISO Symbols of pneumatic components
11 TH	1 ST	Pneumatic circuit Direct control of single acting cylinder
	2 ND	Operation of double acting cylinder
	3 RD	Operation of double acting cylinder with metering in and metering out control
	4 TH	Operation of double acting cylinder with metering in and metering out control
12 TH	1 ST	Operation of double acting cylinder with metering in and metering out control
	2 ND	HYDRAULIC CONTROL SYSTEM Hydraulic system, its merit and demerits.
	3 RD	Hydraulic accumulators
	4 TH	Pressure relief valves
13 TH	1 ST	Pressure control valves.
	2 ND	Pressure regulation valves.
	3 RD	Directioncontrolvalves3/2 DCV,5/2 DCV,5/3DCV.
	4 TH	Directioncontrolvalves3/2 DCV,5/2 DCV,5/3DCV..
14 TH	1 ST	Fluid power pumps, External and internal gear pumps Vane pump Radial piston pumps.
	2 ND	ISO Symbols for hydraulic components.
	3 RD	Actuators
	4 TH	Hydraulic circuits. Direct control of single acting cylinder.
15 TH	1 ST	Operation of double acting cylinder.
	2 ND	Operation of double acting cylinder with metering in and metering Out control.
	3 RD	Operation of double acting cylinder with metering in and metering Out control. Comparison of hydraulic and pneumatic system
	4 TH	CLASS TEST

Learning Resources:

01. Hydraulic Machines By Dr.Jagdish Lal , Metropolitan book Co
02. Hydraulics By Andrew
03. Hydraulic &Pneumatic Control By K Shanmuga,Sundaram, S.Chand
04. Hydraulic &Pneumatic Control By Majumdar , Tmh
05. Fluid Power Control By J.F. Blackburn,G.Reethof &J.Lshearer


 11.07.2025.
 Prepared by
 Subhansu Sekhar Barik
 Lecturer Mechanical Engg Deptt
 G.I.E.T (Polytechnic), Jagatpur, Cuttack


 12/7/25
 Principal
 G.I.E.T (Polytechnic)
 Jagatpur, Cuttack


 12/07/25
 Lecturer
 Mechanical Engg. Deptt.
 G.I.E.T (Polytechnic) Jagatpur