

GOVERNMENT POLYTECHNIC JAIPUR

A/ P: Ragadi, Block: Korei, Dist.: Jajpur, Odisha- 755019

Website: <https://www.gpjajpur.org> E-mail: principalgpjajpur@yahoo.co.in**LESSON PLAN**

Discipline: Mechanical	Semester: 5th	Name of the Teaching Faculty: Gitanjali Sethi
Subject: Hydraulic Machine and Industrial Fluid Power(Th-3)	No. Of Days/Week Class Allotted	Semester From Date: 14.7.25 To Date: 15.11.25 No. of Weeks - 15
Week	Class Day	Theory/Practical Topics
1st	1st	(Chapter – 1) HYDRAULIC TURBINES Introduction, Definition and classification of hydraulic turbines
	2nd	Definition and classification of hydraulic turbines
	3rd	Construction of impulse turbine..
	4th	working principle of impulse turbine
2nd	1st	Velocity diagram of moving blades, work done impulse turbine
	2nd	Derivation of various efficiencies of impulse turbine
	3rd	Numerical on above
	4th	Velocity diagram of moving blades, work done of Francis turbine
3rd	1st	Derivation of various efficiencies of Francis turbine
	2nd	Numerical on above
	3rd	Velocity diagram of moving blades, work done of Kaplan turbine
	4th	Derivation of various efficiencies of Kaplan turbine
4th	1st	Numerical on above
	2nd	Distinguish between impulse turbine and reaction turbine.
	3rd	Revision, Assignment evaluation and Unit Test
	4th	(Chapter – 2) CENTRIFUGAL PUMPS Construction and Working principle of centrifugal pumps
5th	1st	Work done of centrifugal pumps
	2nd	Derivation of various efficiencies of centrifugal pumps..
	3rd	Numerical on above
	4th	Revision, Assignment evaluation and Unit Test

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6th	1st	(Chapter – 3) RECIPROCATING PUMPS Describe construction & working of single acting reciprocating pump.
	2nd	Description of construction & working of double acting reciprocating pump.
	3rd	Derivation of the formula for power required to drive the Single acting pump
	4th	Numerical on above
7th	1st	Derivation of the formula for power required to drive the Double acting pump
	2nd	Numerical on above
	3rd	Definition of slip. State positive & negative slip
	4th	Establishment of relation between slip & coefficient of discharge..
8th	1st	Numerical on above
	2nd	Revision, Assignment evaluation and Unit Test
	3rd	(Chapter – 4) PNEUMATIC CONTROL SYSTEM Introduction
9th	4th	Description of Elements –filter-regulator-lubrication unit.
	1st	Description of Pressure control valves- Pressure relief valves
	2nd	Description of Pressure regulation valves
	3rd	Description of Direction control valves- 3/2DCV, 5/2 DCV
	4th	Description of 5/3DCV
10th	1st	Description of Flow control valves.
	2nd	Description of Throttle valves
	3rd	ISO Symbols of pneumatic components
	4th	ISO Symbols of pneumatic components
11th	1st	Description of Direct control of single acting cylinder
	2nd	Operation of double acting cylinder
	3rd	Operation of double acting cylinder with metering in
	4th	Operation of double acting cylinder with metering out
12th	1st	Revision, Assignment evaluation and Unit Test
	2nd	(Chapter – 5) HYDRAULIC CONTROL SYSTEM Description of Hydraulic system, its merit and demerits.
	3rd	Description of Hydraulic accumulators- Pressure control valves
	4th	Description of Pressure relief valves ,Pressure regulation valves

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13 th	1st	Description of Direction control valves - 3/2DCV, 5/2DCV, 5/3DCV
	2nd	Description of Flow control valves, Throttle valves
	3rd	Description of Fluid power pumps - External and internal gear pumps
	4th	Description of Vane pump, Radial piston pumps
14 th	1st	ISO Symbols for hydraulic components
	2nd	Description of Actuators
	3rd	Description of Hydraulic circuits - Direct control of single acting cylinder, Operation of double acting cylinder
	4th	Operation of double acting cylinder with metering in and metering out control
15 th	1st	Comparison of hydraulic and pneumatic system,
	2nd	Revision, Assignment evaluation and Unit Test
	3rd	Discussion of previous year Question papers
	4th	Discussion of Possible Questions

SL.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHER
1	DR. JAGDISH LAL	HYDRAULIC MACHINES	METROPOLITAN BOOK CO
2	ANDREW	HYDRAULICS	
3	K SHANMUGA, SUNDARAM	HYDRAULIC & PNEUMATIC CONTROL	S. CHAND
4	MAJUMDAR	HYDRAULIC & PNEUMATIC CONTROL	TMH
5	J.F. BLACKBURN, G. REETHOF & J.L. SHEARER	FLUID POWER CONTROL	


10.7.25
Signature of Faculty