

C. V. RAMAN POLYTECHNIC, BHUBANESWAR

LESSON PLAN

Session (2025-2026)

Discipline: Mechanical Engineering	Semester: 5th Semester, Winter/2025	Name of the Faculty: Soumya Dash, Asst. Prof. Email ID: soumya.dash@cvrp.edu.in
Subject: Hydraulic Machines & Industrial Fluid Power, Course code: TH-3	No. of Days/week: 04	Start Date: 14.07.2025 End Date: 15.11.2025
Week	Class Day	Theory Topics
1st	1st	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 Francis turbine.
3rd	1st	Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine
	2nd	Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine
	3rd	Numerical on above
	4th	Numerical on above
4th	1st	Distinguish between impulse turbine and reaction turbine.
	2nd	Revision
	3rd	Revision and Doubt clearing
	4th	Construction and working principle of centrifugal pumps

5th	1st	Construction and working principle of centrifugal pumps
	2nd	work done and derivation of various efficiencies of centrifugal pumps.
	3rd	work done and derivation of various efficiencies of centrifugal pumps.
	4th	Numerical on above
6th	1st	Describe construction & working of single acting reciprocating pump.
	2nd	Describe construction & working of single acting reciprocating pump.
	3rd	Describe construction & working of double acting reciprocating pump.
	4th	Describe construction & working of double acting reciprocating pump.
7th	1st	Derive the formula for power required to drive the pump (Single acting & double acting)
	2nd	Derive the formula for power required to drive the pump (Single acting & double acting)
	3rd	Define slip.
	4th	State positive & negative slip & establish relation between slip & coefficient of discharge.
8th	1st	State positive & negative slip & establish relation between slip & coefficient of discharge.
	2nd	Solve numerical on above
	3rd	Solve numerical on above
	4th	Revision and Doubt clearing
9th	1st	Elements –filter-regulator-lubrication unit
	2nd	Pressure control valves
	3rd	Pressure relief valves
	4th	Pressure regulation valves
10th	1st	Direction control valves
	2nd	ISO Symbols of pneumatic components
	3rd	1 3/2DCV, 5/2 DCV, 5/3DCV
	4th	1 3/2DCV, 5/2 DCV, 5/3DCV
11th	1st	Flow control valves, Throttle valves
	2nd	Direct control of single acting cylinder
	3rd	Operation of double acting cylinder
	4th	Operation of double acting cylinder with metering in and metering out control

12th	1st	Operation of double acting cylinder with metering in and metering out control
	2nd	Hydraulic system, its merit and demerits. Hydraulic accumulators
	3rd	Pressure control valves, Pressure relief valves
	4th	Pressure regulation valves
13th	1st	Direction control valves
	2nd	3/2DCV, 5/2 DCV, 5/3DCV
	3rd	3/2DCV, 5/2 DCV, 5/3DCV
	4th	Flow control valves, Throttle valves, Fluid power pumps
14th	1st	External and internal gear pumps
	2nd	Vane pump, Radial piston pumps
	3rd	ISO Symbols for hydraulic components. Actuators. Hydraulic circuits
	4th	Direct control of single acting cylinder
15th	1st	Operation of double acting cylinder
	2nd	Operation of double acting cylinder with metering in and metering out control
	3rd	Comparison of hydraulic and pneumatic system
	4th	Revision and Doubt clearing

Sash
11/07/2025
Concerned Faculty

B. S. S.
11.7.25
H.O.D.