C. V. RAMAN POLYTECHNIC, BHUBANESWAR

LESSON PLAN

Session (2025-2026)

Discipline: Mechanical Engineering	**Semester:** 3rd Semester, Winter/2025	**Name of the Faculty:** Soumya Dash, Asst. Prof.
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Subject: Fluid Mechanics & Fluid Power, Theory-4, Course code: EEPC207	**No. of Days/week:** 03	Start Date: 14.07.2025
		End Date: 15.11.2025

Week	Class Day	Theory Topics
1st	1st	PROPERTIES OF A FLUID AND HYDROSTATICS: Definition of a fluid, classification of fluids, various fluid properties such as density, specific weight, specific gravity, viscosity and surface tension and state the units, fluid pressure
	2nd	specific gravity, viscosity and surface tension and state the units, fluid pressure, total pressure (hydrostatic force) and location of centre of pressure on vertical, horizontal
	3rd	specific gravity, viscosity and surface tension and state the units, fluid pressure, total pressure (hydrostatic force) and location of centre of pressure on vertical, horizontal
2nd	1st	inclined and curved surfaces by fluid, working of various measuring devices for pressure
	2nd	the principle of manometers of simple, differential and inverted types
	3rd	the principle of manometers of simple, differential and inverted types.
3rd	1st	principle of buoyancy and floatation
	2nd	Simple numericals on Manometer
	3rd	Simple numericals on Manometer
4th	1st	KINEMATICS AND DYNAMICS OF FLUID MECHANICS Various types of flow, circulation and vorticity, stream-line, path line and streak-line
	2nd	various energies of fluid, law of conservation of mass, energy equation -Bernoulli's theorem
	3rd	the limitations of same-application of Bernoulli's equation, the working of venturimeter, pitot tube
5th	1st	equation of flow rate and velocity with respect to venturimeter and pitot tube respectively
	2nd	the working of flowmeter: current meter
	3rd	Simple numericals

6th	1st	**FLOW THROUGH ORIFICES AND NOTCHES, PIPES:** Definition –orifice, orifice coefficient such as Cc, Cv, Cd, Relationship between orifice coefficients
	2nd	weir and notch
	3rd	Discharge over rectangular notch and weir
7th	1st	Discharge over triangular notch, simple numerical
	2nd	Definition of a pipe, laws of fluid friction, Equation of loss of head through pipe due to friction, Darcy's formula and Chezy's formula, hydraulic gradient and total energy line.
	3rd	Definition of a pipe, laws of fluid friction, Equation of loss of head through pipe due to friction, Darcy's formula and Chezy's formula, hydraulic gradient and total energy line,
8th	1st	Nozzle and its application, Power transmission through nozzle
	2nd	The condition of maximum power transmission through nozzle
	3rd	Expression for diameter of nozzle for maximum power transmission
9th	1st	**Turbines and Pumps** Classification of hydraulic turbines, Selection of turbine on the basis of head and discharge available, Construction and working principle of Pelton wheel, Francis and Kaplan turbines.
	2nd	Draft tubes – types and construction, Concept of cavitation in turbines
	3rd	Calculation of Work done, Power, efficiency of turbines, Simple numericals
10th	1st	**Centrifugal Pumps**
	2nd	Principle of working and applications, Types of casings and impellers
	3rd	Concept of multistage, Priming and its methods
11th	1st	Manometric head, Work done, Manometric efficiency, Overall efficiency, Simple numericals
	2nd	**Reciprocating Pumps**
	3rd	Construction, working principle and applications of single and double acting reciprocating pump
12th	1st	Concept of Slip, Negative slip
	2nd	Cavitation and separation
	3rd	Simple numericals
13th	1st	**FLUID POWER** Definition of fluid power, classification – hydraulic power and pneumatic power
	2nd	Hydraulic Systems -Basic principle of enclosed hydraulic system – Pascal's law, Oil hydraulic system – reservoir
	3rd	filter pressure limiting valves, direction control valves, flow control valves, actuators (linear and rotary)
14th	1st	accumulator, pipes and fittings

	2nd	various positive displacement pumps-gear, vane
	3rd	piston, drawing of hydraulic circuits
15th	1st	extension and retraction of linear actuator
	2nd	motion of rotary actuator
	3rd	holding a job, hydraulic press etc. REVISION

11.07.2025
Concerned Faculty

11.7.25
H.O.D.