SYNERGY SCHOOL OF ENGINEERING,DHENKANAL

LESSON PLAN

Session-2025-2026(Winter)

Discipline: Mechanical Engineering	**Semester: 3rd , Winter/2025**	**Name of the Faculty: Mr Mihir Kumar Swain** Lecturer **Email ID:** rmihirswain13@gmail.com
Subject: Fluid Mechanics &Fluid Power TH-04	**No. of Days/week:** 04	**Start Date:14/07/2025** **End Date:** 15/11/25

Week	Class Day	Theory Topics
1st	1st	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
	2nd	solve simple problems
	3rd	fluid pressure, total pressure (hydrostatic force) and location of centre of pressure on vertical, horizontal surfaces by fluid
2nd	1st	solve simple problems
	2nd	location of centre of pressure on inclined and curved surfaces by fluid
	3rd	solve simple problems
3rd	1st	working of various measuring devices for pressure, the principle of simple manometer
	2nd	the principle of differential manometer, inverted Manometer
	3rd	solve simple problems, principle of buoyancy and floatation
4th	1st	, Various types of flow, circulation and vorticity, stream-line, path line and streak-line, various energies of fluid
	2nd	law of conservation of mass, energy equation, Bernoulli's theorem
	3rd	solve simple problems
5th	1st	limitations of same-application of Bernoulli's equation, the working of venturimeter, pitot tube, equation of flow rate and velocity with respect to venturimeter and pitot tube respectively

	2nd	solve simple problems
	3rd	the working of flowmeter: current meter,
6th	1st	. Definition –orifice, orifice coefficient such as Cc, Cv, Cd, Relationship between orifice coefficients, weir and notch
	2nd	Discharge over rectangular notch and weir
	3rd	Discharge over triangular notch
7th	1st	solve simple problems
	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 o
	3rd	solve simple problems
8th	1st	Nozzle and its application, Power transmission through nozzle
	2nd	The condition of maximum power transmission through nozzle, Expression for diameter of nozzle for maximum power transmission
	3rd	solve simple problems
9th	1st	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 for impulse turbine, solve numericals
10th	1st	Calculation of Work done, Power for reaction turbine, efficiency of turbine
	2nd	solve simple problems
	3rd	Principle of working and applications, Types of casings and impellers, Concept of multistage, Priming and its methods
11th	1st	Manometric head, Work done, Manometric efficiency, Overall efficiency
	2nd	Simple numericals
	3rd	Construction, working principle and applications of single and double acting reciprocating pumps,
12th	1st	Work done,Concept of Slip, Negative slip, Cavitation and separation
	2nd	, solve simple problems

	3rd	solve simple problems
13th	1st	Definition of fluid power, classification – hydraulic power and pneumatic power, Hydraulic Systems -Basic principle of enclosed hydraulic system
	2nd	Pascal's law, Oil hydraulic system – reservoir, filter pressure limiting valves
	3rd	direction control valves, flow control valves
14th	1st	actuators (linear and rotary), accumulator, pipes & fittings
	2nd	various positive displacement pumps like vane, piston pump, gear pump
	3rd	drawing of hydraulic circuits
15th	1st	extension and retraction of linear actuator
	2nd	motion of rotary actuator, holding a job, hydraulic press
	3rd	Previous year questions discussed

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