LESSON PLAN FOR ACADEMIC SESSION 2026-27 (Winter)

Discipline: Mechanical Engg.	Semester: 3rd	Name of the Teaching Faculty: Dinesh Kumar Sahu Designation: Lecturer S-1
Subject: Fluid Mechanics and Fluid Power (Th-4)	No of days/ week class allotted:03	Semester From: 01/07/2026 to 05/11/2026 Nos of weeks per semester :15
Week	**Class Day**	**Theory Topics**
1st	1st	**1.PROPERTIES OF A FLUID AND HYDROSTATICS:** Definition of a fluid, classification of fluids
	2nd	Various fluid properties such as density, specific weight, specific gravity, viscosity and surface tension and state the units
	3rd	Various fluid properties such as density, specific weight, specific gravity, viscosity and surface tension and state the units
2nd	1st	fluid pressure, total pressure (hydrostatic force) and location of centre of pressure on vertical, horizontal inclined and curved surfaces by fluid
	2nd	fluid pressure, total pressure (hydrostatic force) and location of centre of pressure on vertical, horizontal inclined and curved surfaces by fluid
	3rd	working of various measuring devices for pressure,
3rd	1st	the principle of manometers of simple, differential and inverted types,
	2nd	principle of buoyancy and floatation.
	3rd	Simple numerical on Manometer.
4th	1st	**2.KINEMATICS AND DYNAMICS OF FLUID MECHANICS** Various types of flow, circulation and vortices,
	2nd	stream-line, path line and streak-line, various energies of fluid,
	3rd	law of conservation of mass, energy equation -Bernoulli's theorem, the limitations of same-application of Bernoulli's equation
5th	1st	the working of venturimeter, pitot tube,
	2nd	Equation of flow rate and velocity with respect to venturimeter and pitot tube respectively
	3rd	The working of flowmeter: current meter, Simple numericals.
6th	1st	**3.FLOW THROUGH ORIFICES AND NOTCHES, PIPES:** Definition –orifice, orifice coefficient such as Cc, Cv, Cd, Relationship between orifice coefficients,
	2nd	Weir and notch, Discharge over rectangular notch and weir,
	3rd	Triangular notch. Simple numericals.
7th	1st	Definition of a pipe. laws of fluid friction, Equation of loss of head through pipe due to friction,
	2nd	Darcy's formula and Chezy's formula
	3rd	Hydraulic gradient and total energy line,
8th	1st	Nozzle and its application
	2nd	Power transmission through nozzle The condition of maximum power transmission through nozzle,
	3rd	Expression for diameter of nozzle for maximum power transmission.
9th	1st	**4.Turbines and Pumps:** Classification of hydraulic turbines, Selection of turbine on the basis of head and discharge available,
	2nd	Construction and working principle of Peloton wheel, Francis and Kaplan turbines.
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10th	1st	Draft tubes – types and construction, Concept of cavitation in

		turbines,.
	2nd	Calculation of Work done, Power, efficiency of turbines
	3rd	Simple numericals
11th	1st	**Centrifugal Pumps:** Principle of working and applications
	2nd	Types of casings and impellers, Concept of multistage, Priming and its methods
	3rd	Manometric head, Work done, Manometric efficiency, Overall efficiency. Simple numerical
12th	1st	**Reciprocating Pumps:** Construction, working principle and applications of single and double acting reciprocating pumps
	2nd	Concept of Slip, Negative slip, Cavitation and separation.
	3rd	Simple numerical
13th	1st	**5.FLUID POWER:** Definition of fluid power, classification – hydraulic power and pneumatic power,
	2nd	Hydraulic Systems -Basic principle of enclosed hydraulic system – Pascal's law,
	3rd	Oil hydraulic system – reservoir, filter pressure limiting valves, direction control valves, flow control valves
14th	1st	actuators (linear and rotary),
	2nd	accumulator, pipes and fittings,
	3rd	various positive displacement pumps-gear, vane, piston,
15th	1st	Drawing of hydraulic circuits - extension and retraction of linear actuator
	2nd	Motion of rotary actuator,.
	3rd	Holding a job, hydraulic press etc.

Prepared By:

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