

LESSON PLAN FOR ACADEMIC SESSION 2026-27 (Winter)

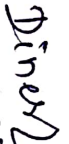
Discipline: Mechanical Engg.	Semester: 3rd	Name of the Teaching Faculty: Dinesh Kumar Sahu Designation: Lecturer S-1
Subject: Fluid Mechanics and Fluid Power (Th-4)	No of days/ week class allotted:03	Semester From: 01/07/2026 to 05/11/2026 Nos of weeks per semester :15
Week	Class Day	Theory Topics
1st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

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

Prepared By:

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