



NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)



LESSON PLAN

SUBJECT: FLUID MECHANICS & FLUID POWER (MEPC207-TH-4)

Name Of The Faculty :- Er. Ranjit Giri

Branch :- Mechanical Engineering

Academic Year : 2025-26

Semester :- 3rd

Examination :- 2025 (w)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	PROPERTIES OF A FLUID AND HYDROSTATICS	9	12
2	KINEMATICS AND DYNAMICS OF FLUID MECHANICS	6	10
3	FLOW THROUGH ORIFICES AND NOTCHES, PIPES	9	12
4	Turbines and Pumps	12	16
5	FLUID POWER	9	10
	Total Period:	45	60


10/07/2025

Sign of Faculty


10/07/2025

Sign of H.O.D.

Name of the programme: Diploma in MECHANICAL ENGINEERING	Semester: 3rd	Name of the Teaching Faculty: Er. Ranjit Giri	
		Academic Year : 2025-26	Examination : 2025 (W)
Course Code: MEPC207	Course Year: SECOND Year	No. of Classes Alloted Per Week :	4
		Planned Classes Required to Complete the Course	60
Week	Class Day	Topics to be Covered	
1 st	1 st	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.	
	3 rd	State the units, fluid pressure, total pressure (hydrostatic force).	
	4 th	Location of centre of pressure on vertical, horizontal, inclined and curved surfaces by fluid, working of various measuring devices for pressure .	
2 nd	1 st	Location of centre of pressure on vertical, horizontal, inclined and curved surfaces by fluid, working of various measuring devices for pressure .	
	2 nd	The principle of manometers of simple, differential and inverted types.	
	3 rd	The principle of manometers of simple, differential and inverted types.	
	4 th	The principle of manometers of simple, differential and inverted types.	
3 rd	1 st	Principle of buoyancy and floatationrinciple of buoyancy and floatation .	
	2 nd	Principle of buoyancy and floatationrinciple of buoyancy and floatation .	
	3 rd	Simple numericals on Manometer.	
	4 th	Simple numericals on Manometer.	
4 th	1 st	KINEMATICS AND DYNAMICS OF FLUID MECHANICS Various types of flow.	
	2 nd	Circulation and vorticity, stream-line, path line and streak-line, various energies of fluid.	
	3 rd	Circulation and vorticity, stream-line, path line and streak-line, various energies of fluid.	
	4 th	Law of conservation of mass.	
5 th	1 st	Energy equation -Bernoulli's theorem.	
	2 nd	The limitations of same-application of Bernoulli's equation.	
	3 rd	The working of venturimeter, pitot tube, equation of flow rate and velocity with respect to venturimeter and pitot tube respectively,	
	4 th	The working of venturimeter, pitot tube, equation of flow rate and velocity with respect to venturimeter and pitot tube respectively,	

Week	Class Day	Topics to be Covered
6 th	1 st	The working of flowmeter: current meter, Simple numericals
	2 nd	Simple numericals
	3 rd	FLOW THROUGH ORIFICES AND NOTCHES, PIPES: Definition –orifice, orifice coefficient such as C _c , C _v , C _d ,
	4 th	Relationship between orifice coefficients.
7 th	1 st	Definition weir and notch.
	2 nd	Definition of a pipe. laws of fluid friction
	3 rd	Equation of loss of head through pipe due to friction, Darcy's formula and Chezy's formula
	4 th	Equation of loss of head through pipe due to friction, Darcy's formula and Chezy's formula
8 th	1 st	hydraulic gradient and total energy line
	2 nd	Nozzle and its application
	3 rd	Power transmission through nozzle .The condition of maximum power transmission through nozzle
	4 th	Power transmission through nozzle. The condition of maximum power transmission through nozzle
9 th	1 st	Expression for diameter of nozzle for maximum power transmission.
	2 nd	Expression for diameter of nozzle for maximum power transmission.
	3 rd	Turbines and Pumps: Classification of hydraulic turbines.
	4 th	Selection of turbine on the basis of head and discharge available
10 th	1 st	Construction and working principle of Pelton wheel, Francis and Kaplan turbines
	2 nd	Construction and working principle of Pelton wheel, Francis and Kaplan turbines
	3 rd	Draft tubes – types and construction.
	4 th	Concept of cavitation in turbines
11 th	1 st	Calculation of Work done, Power, efficiency of turbines.
	2 nd	Calculation of Work done, Power, efficiency of turbines.
	3 rd	Simple numericals

Week	Class Day	Topics to be Covered
11 th	4 th	Simple numericals
12 th	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.
	4 th	Simple numericals
13 th	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 numericals
	4 th	FLUID POWER: Definition of fluid power, classification – hydraulic power and pneumatic power
14 th	1 st	Hydraulic Systems -Basic principle of enclosed hydraulic system – Pascal's law
	2 nd	Oil hydraulic system – reservoir, filter pressure limiting valves,
	3 rd	direction control valves, flow control valves, actuators (linear and rotary)
	4 th	accumulator, pipes and fittings,
15 th	1 st	various positive displacement pumps-gear, vane, piston
	2 nd	drawing of hydraulic circuits - extension and retraction of linear actuator
	3 rd	motion of rotary actuator, holding a job, hydraulic press etc.
	4 th	motion of rotary actuator, holding a job, hydraulic press etc.



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