

3rd Semester-2026

SUBJECT-FLUID MECHANICS & FLUID POWER

Total periods-45

Branch-Mechanical Engineering.

Th.4 - 3P/Week

Course Code: MEPC207

Sl No.	week	Day	Topics to be covered
1	1st	1st day	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 day	Total pressure (hydrostatic force) and location of Centre of pressure on vertical, horizontal, inclined and curved surfaces by fluid,
		3rd day	Working of various measuring devices for pressure, the principle of manometers of simple and differential
2	2nd	1st day	Inverted type Manometer
		2nd day	Principle of buoyancy and floatation
		3rd day	Simple numericals on Manometer
3	3rd	1st day	Kinematics and Dynamics of fluid mechanics Various types of flow, circulation and vorticity, stream-line, path line and streak-line
		2nd day	Various energies of fluid, law of conservation of mass, energy equation - Bernoulli's theorem
		3rd day	The limitations of same-application of Bernoulli's equation, Working of venturimeter
4	4th	1st day	Pitot tube, Equation of flow rate and velocity with respect to venturimeter and pitot tube
		2nd day	The working of flowmeter: current meter
		3rd day	Simple numericals
5	5th	1st day	Flow Through Orifices and Notches,Pipes Definition –Orifice, orifice coefficient such as C_c , C_v , C_d ,
		2nd day	Relationship between orifice coefficients, weir and notch Discharge over rectangular notch and weir, triangular notch.
		3rd day	Simple numericals.
6	6th	1st day	Definition of a pipe. laws of fluid friction, Equation of loss of head through pipe due to friction
		2nd day	Darcy's formula and Chezy's formula, Hydraulic gradient and total energy line
		3rd day	Nozzle and its application
7	7th	1st day	Power transmission through nozzle, The condition of maximum power transmission through nozzle
		2nd day	Expression for diameter of nozzle for maximum power transmission
		3rd day	Simple numericals.
8	8th	1st day	Turbines and Pumps: Classification of hydraulic turbines, Selection of turbine on the basis of head and discharge available
		2nd day	Construction and working principle of Pelton wheel

		3rd day	Francis and Kaplan turbines
9	9th	1st day	Draft tubes – types and construction
		2nd day	Concept of cavitation in turbines, Calculation of Work done
		3rd day	Power, efficiency of turbines. Simple numericals
10	10th	1st day	Centrifugal Pumps Principle of working and applications
		2nd day	Types of casings and impellers
		3rd day	Concept of multistage, Priming and its methods
11	11th	1st day	Manometric head, Work done, Manometric efficiency
		2nd day	Overall efficiency, Simple numericals
		3rd day	Reciprocating Pumps: Construction and working principle
12	12th	1st day	Applications of single and double acting reciprocating pump
		2nd day	Cavitation and separation.
		3rd day	Simple numericals

13	13th	1st day	Fluid Power Definition of fluid power, classification hydraulic power and pneumatic power
		2nd day	Hydraulic Systems -Basic principle of enclosed hydraulic system
		3rd day	Pascal's law, Oil hydraulic system – reservoir
14	14th	1st day	Filter pressure limiting valves, direction control valves
		2nd day	Flow control valves, Actuators (linear and rotary)
		3rd day	Accumulator, pipes and fittings
15	15th	1st day	Various positive displacement pumps-gear, vane, piston
		2nd day	Drawing of hydraulic circuits - extension and retraction of linear actuator
		3rd day	Motion of rotary actuator, Holding a job and hydraulic press