



Atal Bihari Vajpayee Govt Institute of Engineering & Technology

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

Academic Year	AUGUST 2026-DEC2026
Scheme	N-2022
Semester	FIFTH
Course Code	MEPC301
Course Name	Fluid Mechanics & Hydraulic Machinery
Course Type	PROGRAMME CORE COURSE (PC)
L-T-P	2-2-0
Name of Faculty	NIKHIL SHARMA
Semester Start & End Dates	01-08-2026 TO 28-11-2026

STUDY AND EVALUATION SCHEME

Sr. No.	Name of the Subject	Th.	Pr.	Internal Assessment			External Assessment					Total Marks	Credit
				Th.	Pr.	Total	Th.	Hrs.	Pr.	Hrs.	Total		
1	Basic Mechanical Engineering	04	02	40	40	80	60	03	60	03	120	200	02

On the successful completion of this course, students will be able to:-

CO1	Measure various properties such as pressure, velocity, flow rate using various instruments.
CO2	Calculate different parameters such as co-efficient of friction, power, efficiency etc of various Systems..
CO3	Describe the construction and working of turbines and pumps
CO4	Test the performance of turbines and pumps.
CO5	Plot characteristics curves of turbines and pumps

Reference Books:

1. Fluid Mechanics & Hydraulic Machines, S.S. Rattan, Khanna Publishing House, New Delhi
2. Hydraulic, fluid mechanics & fluid machines–Ramamrutham S, Dhanpath Rai and Sons, New Delhi.

Teaching Plan:

Unit No	No. of Lect. Planned	Topic to be covered	Proposed date (as per time table)	Actual Date	Remarks
Unit-1: Properties of fluid, Fluid Pressure & Pressure Measurement:	1	Density, Specific gravity, Specific Weight, Specific Volume	03.08.2026		
	2	Dynamic Viscosity, Kinematic Viscosity,	04.08.2026		
	3	Surface tension, Capillarity,	05.08.2026		
	4	Vapour Pressure, Compressibility.	10.08.2026		
	5	Fluid Pressure & Pressure Measurement: Fluid pressure, Pressure head	11.08.2026		
	6	Pressure intensity, Concept of vacuum and gauge pressures, atmospheric pressure, absolute pressure	12.08.2026		
	7	Simple and differential manometers,	17.08.2026		
	8	Numericals	18.08.2026		
	9	Numericals	19.08.2026		
	10	Numericals	22.08.2026		
	11	Bourdan pressure gauge,	24.08.2026		
Unit-2 :Fluid Flow, Flow Through Pipes	12	Types of fluid flows, Path line and Stream line	25.08.2026		
	13	Continuity equation, Bernoulli's theorem for ideal fluid	26.08.2026		
	14	Principle of operation of Venturimeter	29.08.2026		
	15	Principle of operation of Orifice meter and Pitot tube	31.08.2026		
	16	Derivations for discharge, coefficient of discharge	01.09.2026		
	17	Numericals	02.09.2026		
	18	Numericals	05.09.2026		
	19	Laminar and turbulent flows; Darcy's equation and Chezy's equation for frictional losses	09.09.2026		
	20	Minor losses in pipes, Hydraulic gradient and total gradient line	14.09.2026		
	21	Numericals	15.09.2026		

Unit-3 :Impact of jets:	22	Numericals	16.09.2026		
	23	Impact of jet on fixed vertical plates of turbines	19.09.2026		
	24	Numericals	21.09.2026		
	25	Impact of jet on moving vertical flat plates	22.09.2026		
	26	Numericals	23.09.2026		
	27	Impact of jet on curved vanes with special reference to turbines	26.09.2026		
	28	Numericals	28.09.2026		
	29	Numericals	29.09.2026		
	30	Numerical on work done and efficiency	30.09.2026		
	31	Numerical on work done and efficiency.	03.10.2026		
	32	DCS	7.10.2026		
	33	DCS	12.10.2026		
	34	DCS	13.10.2026		
Unit -4 Hydraulic Turbines:	37	Layout of hydroelectric power plant, Features of Hydro electric power plant,	14.10.2026		
	38	Classification of hydraulic turbines, Selection of turbine on the basis of head and discharge available,	17.10.2026		
	39	Construction and working principle of Pelton wheel,	19.10.2026		
	40	Construction and working principle of Francis and Kaplan turbines	21.10.2026		
	41	Draft tubes – types and construction, Concept of cavitation in turbines,	24.10.2026		
	42	Calculation of Work done, Power, efficiency of turbines, Unit quantities	27.10.2026		
	43	Numericals	28.10.2026		
	44	Numericals	31.10.2026		
Unit -5 :Air Compressors:Centrifugal Pumps (Problems omitted), Reciprocating Pumps(Problems omitted):	45	Principle of working and applications	7.11.2026		
	46	Types of casings and impellers, Concept of multistage	9.11.2026		
	47	Concept of Priming and, Cavitation, Manometric head,	10.11.2026		
	48	Work done, Manometric efficiency, Overall efficiency	11.11.2026		
	49	Construction, working principle and applications of single acting reciprocating pumps,	16.11.2026		
	50	Construction, working principle and applications	17.11.2026		

		of double acting reciprocating pumps,			
	51	Concept of Slip, Negative slip	18.11.2026		
	52	Cavitation and separation.	21.11.2026		
	53	Cavitation and separation.	25.11.2026		
	54	DCS	28.11.2026		

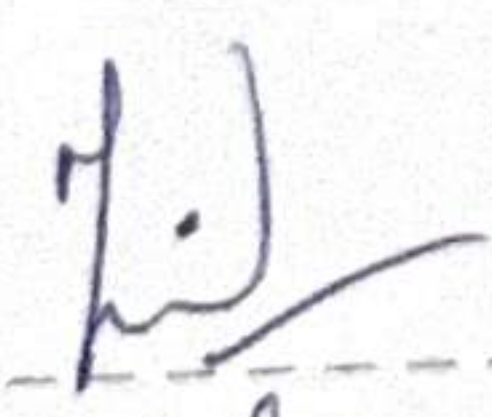
Home Assignments

Ass. No	Contents of Syllabus Covered	Proposed date	Actual Date	Remarks
1	Unit-1&2	16.09.2026		
2	Unit-3&4	31.10.2026		
3				

Class /House Test

Name of Test	Syllabus Covered in Tests (Unit/Chapter Wise)	Proposed date	Actual Date	Remarks
Class Test-I	30% of whole syllabus	As per HPTSB Academic Calendar Schedule		
Class Test-II	60% of whole syllabus			
House Test	80% of whole syllabus			

Signature of Course Teacher with Name

Signature: 
 Vikash Sharma

Approved by


 OIC/HoD/Principal

Faculty Signature: _____