LESSON PLAN

SUB: FM&FP

BRANCH:- MECHANICAL ENGG.

SEMESTER: 3rd

NAME OF FACULTY: ER. Sagar kumar behera

GOVERNMENT POLYTECHNIC, BHADRAK
SESSION:2025-26

Hod ,Mechanical   Academic Co-ordinator   Principal

Govt. Polytechnic, Bhadrak

Discipline: MECHANICAL	Semester :3rd	Name of the Teaching Faculty Sagar kumar behera Lecturer (Stage-II),Mechanical Engineering
Subject: FM&FP	No. of days/perweek class allotted: 3	Semester From date: 14/07/2025 To date:15-11-25 No of weeks: 15

Week	Class Day	Theory Topics:
1st	1st	Introduction to Fluid Mechanics: Definition & Classification of Fluids
	2nd	Fluid Properties: Density, Specific Weight, Specific Gravity, Viscosity
	3rd	Fluid Properties: Surface Tension, Units. Simple numericals
2nd	1st	Fluid Pressure, Total Pressure (Hydrostatic Force)
	2nd	Location of Centre of Pressure on Vertical, Horizontal, Inclined Surfaces
	3rd	Location of Centre of Pressure on Curved Surfaces, Principle of Manometers
3rd	1st	Manometers: Simple, Differential, and Inverted Types
	2nd	Principle of Buoyancy and Floatation. Simple numericals on Manometers
	3rd	Kinematics of Fluid: Types of Flow, Streamline, Pathline, Streakline
4th	1st	Dynamics of Fluid: Energies of Fluid, Law of Conservation of Mass
	2nd	Bernoulli's Theorem: Derivation, Limitations, Applications
	3rd	Working of Venturimeter, Pitot Tube. Simple numericals
5th	1st	Flowmeter: Current Meter, Equation of Flow Rate & Velocity (Venturimeter, Pitot Tube)
	2nd	**CLASS TEST - 1 (Units I & II)**
	3rd	Flow through Orifices: Definition, Orifice Coefficients (Cc, Cv, Cd)
6th	1st	Relationship between Orifice Coefficients. Simple numericals
	2nd	Flow through Notches: Weir and Notch, Discharge over Rectangular Notch
	3rd	Discharge over Rectangular Weir and Triangular Notch. Simple numericals
7th	1st	Flow through Pipes: Definition, Laws of Fluid Friction
	2nd	Loss of Head due to Friction: Darcy's and Chezy's Formulas
	3rd	Hydraulic Gradient and Total Energy Line. Nozzle and its application

8th	1st	Power Transmission through Nozzle: Condition for Maximum Power
	2nd	Expression for Diameter of Nozzle for Maximum Power Transmission
	3rd	Hydraulic Turbines: Classification, Selection of Turbine
9th	1st	Construction & Working Principle of Pelton Wheel Turbine
	2nd	Construction & Working Principle of Francis Turbine
	3rd	Construction & Working Principle of Kaplan Turbine
10th	1st	Draft Tubes: Types and Construction. Cavitation in Turbines
	2nd	Calculation of Work Done, Power, Efficiency of Turbines. Simple numericals
	3rd	**CLASS TEST - 2 (Unit III & part of Unit IV)**
11th	1st	Centrifugal Pumps: Principle of Working and Applications
	2nd	Types of Casings and Impellers, Concept of Multistage, Priming & its Methods
	3rd	Manometric Head, Work Done, Manometric & Overall Efficiency. Simple numericals
12th	1st	Reciprocating Pumps: Construction, Working Principle (Single Acting)
	2nd	Reciprocating Pumps: Construction, Working Principle (Double Acting)
	3rd	Concept of Slip, Negative Slip, Cavitation, and Separation. Simple numericals
13th	1st	Fluid Power: Definition, Classification (Hydraulic & Pneumatic Power)
	2nd	Hydraulic Systems: Basic Principle (Pascal's Law), Components (Reservoir, Filter)
	3rd	Oil Hydraulic System Components: Pressure Limiting Valves, Direction Control Valves
14th	1st	Oil Hydraulic System Components: Flow Control Valves, Actuators (Linear & Rotary)
	2nd	Oil Hydraulic System Components: Accumulator, Pipes and Fittings
	3rd	Positive Displacement Pumps: Gear, Vane, Piston Pumps
15th	1st	Drawing of Hydraulic Circuits: Extension & Retraction of Linear Actuator
	2nd	Drawing of Hydraulic Circuits: Motion of Rotary Actuator, Holding a Job
	3rd	Drawing of Hydraulic Circuits: Hydraulic Press etc. Revision & Discussion of PYQ

Sagar kumar behera

Lecturer (Stage-II)