

GOVERNMENT POLYTECHNIC JAJPUR
A/ P: Ragadi, Block: Korei, Dist.: Jajpur, Odisha- 755019

DEPARTMENT OF PRECISION MANUFACTURING ENGINEERING

LESSON PLAN

Discipline: PME	Semester: 4th	Name of the Teaching faculty: Suprava Behera
Subject- Hydraulics and Pneumatics	No of Days/Week class allotted: 3	Semester from Date: 22.12.2025 To Date: 18.04.2026 No of weeks: 15
SL.NO	Class/Day	TOPICS TO BE COVERED
1	1st	Introduction to Hydraulics and Pneumatics
	2nd	Difference between Hydraulics and Pneumatics
	3rd	Working principle of Hydraulics and Pneumatics
2	1st	Hydraulics and Pneumatics graphic symbols and study of circuit diagram
	2nd	Concept of fluid properties and definition (viscosity, compressibility, density)
	3rd	Pascal's Law and its application
3	1st	Fluid flow principles (laminar, turbulent flow)
	2nd	Introduction to Hydraulic Components
	3rd	Working principle of Positive displacement pumps (gear, piston, vane)
4	1st	Working principle of Centrifugal pumps
	2nd	Working principle of Directional control valves (solenoid operated, manually operated)
	3rd	Working principle of Pressure relief valves
5	1st	Working principle of Flow control valves
	2nd	Working of Hydraulic actuators (cylinders)
	3rd	Working of Hydraulic actuators (motors)
6	1st	Basic hydraulic circuit design
	2nd	Function design of Open loop circuits
	3rd	Working of Open loop circuits
7	1st	Function design of closed loop circuits
	2nd	Working of closed loop circuits
	3rd	Function, design and working of Regenerative circuits

8	1st	Function, design and working of Pressure and flow control circuits
	2nd	Servo-hydraulic systems.
	3rd	Working of Air compressors (reciprocating)
9	1st	Working of Air compressors (rotary screw)
	2nd	Function and working of Air receivers, Air filters
	3rd	Function and working of regulators, lubricators
10	1st	Working of (FRL) Pneumatic actuators (cylinders)
	2nd	Working of (FRL) Pneumatic actuators (motors)
	3rd	Working of Directional control valves
11	1st	Classification and application of Directional control valves
	2nd	Basic pneumatic circuit design
	3rd	Concept and application of Logic circuits (AND)
12	1st	Concept and application of Logic circuits (OR)
	2nd	Concept and application of Logic circuits (NOT)
	3rd	Principle of Sequencing circuits
13	1st	Functions of components and application of Sequencing circuits
	2nd	Principle of Vacuum circuits
	3rd	Functions of components and application of Vacuum circuits
14	1st	Fluid power safety procedures for hydraulic systems
	2nd	Fluid power Contamination control for hydraulic systems
	3rd	Fluid power safety procedures for pneumatic systems
15	1st	Fluid power Contamination control for pneumatic systems
	2nd	Maintenance practices for hydraulic systems
	3rd	Maintenance practices for pneumatic systems. Probable question discussion.


 20.12.25
 Lect (Mech)
 FACULTY SIGNATURE