



Lesson Plan & Work-Done Diary for AY:2026-27, Odd Semester

Course with Code: Hydraulics and Pneumatics BME702				Faculty: Dr. Srinivasa. K			Semester & Section: 7 th Sem	
MODULE-1								
Class No.	Date Planned (DD/MM)	Topics to be covered	TLP Planned	Class No.	Date of Conduction (DD/MM)	Topics Covered	TLP Executed	Remarks if any deviation
1		Introduction to fluid power systems: components, advantages and applications.	PPT					
2		Transmission of power at static and dynamic states.	PPT					
3		Pascal’s law and its applications.	PPT					
4		Numerical on pascals law.	Chalk & Talk					
5		Fluids for hydraulic system: types, properties, and selection	Chalk & Talk PPT					
6		Additives, effect of temperature and pressure on hydraulic fluid.	Chalk & Talk PPT					
7		Seals, sealing materials, compatibility of seal with fluids	Chalk					

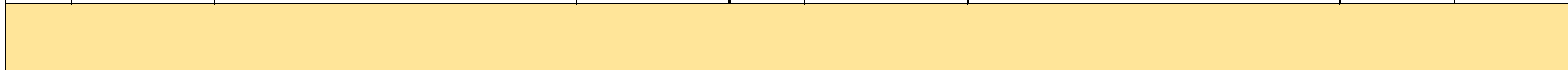
8		Fluid conditioning through filters, strainers;	Chalk & Talk PPT					
9		Strainers; sources of contamination and contamination control.	PPT					
10		Heat exchangers.	PPT					

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Class No.		Topics to be covered	TLP Planned	Class No.	Date of Conduction (DD/MM)	Topics Covered	TLP Executed	Remarks if any deviation
11		Pumps and Actuators Pumps: Classification of pumps, pumping theory of positive displacement pumps,	PPT					
12		Construction and working of Gear pumps, Vane pumps,	PPT					
13		Construction and working of Piston pumps, fixed and variable displacement pumps	Chalk					
14		Pump performance characteristics, pump selection factors	PPT					
15		Problems with pumps.	PPT					
16		Actuators: Classification cylinder and hydraulic motors, Hydraulic cylinders, single and double acting cylinder,	Chalk					
17		Mounting arrangements, cushioning, special types of cylinders,	PPT					

18		Problems on cylinders Construction and working of rotary actuators such as gear, vane, piston motors,	PPT					
19		Hydraulic Motor. Theoretical torque, power, flow rate, and hydraulic motor performance; numerical problems. Symbolic representation of hydraulic actuators (cylinders and motors).	Chalk & Talk PPT					
20		Accumulators: Types, selection/ applications of accumulators Quiz-1	PPT					
Class No.		Topics to be covered	TLP Planned	Class No.	Date of Conduction (DD/MM)	Topics Covered	TLP Executed	Remarks if any deviation
21		Components and Hydraulic Circuit Design Components: Classification of control valves, Directional Control Valve symbolic representation,	Chalk & Talk PPT					
22		Constructional features of poppet, sliding spool, shuttle valve, and check valves.	PPT					
23		Pressure control valve types, direct operated types and pilot operated types.	PPT					

24		Flow Control Valves compensated and non-compensated FCV, needle valve.	PPT					
25		Temperature compensated, pressure compensated, pressure and temperature compensated FCV,	PPT					
26		Circuit Design: Control of single and Double acting hydraulic cylinder, regenerative circuit, pump unloading circuit, double pump hydraulic system	PPT					
27		Counterbalance valve application, hydraulic cylinder sequencing circuits	PPT					
28		Cylinder synchronizing circuit using different methods, hydraulic circuit for force multiplication; speed control of hydraulic cylinder metering in, metering out	PPT					
29		Hydraulic circuit examples with accumulator.	PPT					
30		A] Study of Construction and working Hydraulic pumps and Pneumatic B] Study of Hydraulic and Pneumatic valves. C] Study of solenoid valves, limit switches. Pressure, flow control valve.	Chalk					



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31		Pneumatic Power Systems Introduction to Pneumatic systems: Pneumatic power system, advantages, limitations, applications, Choice of working medium.	PPT					
32		Characteristics of compressed air and air compressors	PPT					
33		Structure of pneumatic control System, fluid conditioners dryers and FRL unit.	PPT					
34		Pneumatic Actuators: Linear cylinder – types of cylinders, working, end position cushioning.	PPT					
35		Seals, mounting arrangements, and applications. Rotary cylinder types, construction and application, symbols.	PPT					
36		Pneumatic Control Valves: DCV such as poppet, spool, suspended seat type slide valve.	PPT					
37		Pressure control valves, flow control valves, types and construction, use of memory valve	PPT					
38		Quick exhaust valve, time delay valve.	PPT					

39		2.Basic hydraulic circuit for the working of a double acting cylinder and a hydraulic motor	Chalk & Talk PPT					
40		3.Basic pneumatic circuit for the working of single and double acting cylinder 4. Speed control circuits. Different Metering methods Inlet & outlet flow control (meter in & meter out circuit)	Chalk & Talk					

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41		Pneumatic Control Circuits Simple Pneumatic Control: Direct and indirect actuation pneumatic cylinders,	PPT					
42		Speed control of cylinders supply air throttling and exhaust air throttling	PPT					
43		Signal Processing Elements: Use of Logic gates OR and AND gates in pneumatic applications	PPT					
44		Practical examples involving the use of logic gates.	PPT					
45		Multi Cylinder Application: Coordinated and sequential motion control, motion and control diagrams.	PPT					

46		Signal elimination methods, Cascading method principle, Practical application examples (up to two cylinders) using cascading method (using reversing valves).	PPT					
47		5. Circuits for the Use of different direction control valves and valve actuation in single and double acting cylinder, and multi actuation circuit. 6. Hydraulic Counterbalancing circuit.	PPT					
48		7. Hydraulic or Pneumatic Regenerative circuit. 8. Hydraulic or Pneumatic Sequencing circuit.	PPT					
49		Demo experiments for CIE Circuit with cam operated pilot valves operating a pilot operated 4way direction control Valve or proximity/ limit switches, solenoid operated 4way direction control valve for Auto reversing circuit.	PPT					
50		Demo experiments for CIE Circuit with cam operated pilot valves operating a pilot operated 4way direction control Valve or proximity/ limit switches, solenoid operated 4way direction control valve for Auto reversing circuit.	PPT					



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	Activity	Planned	Actual	Remarks
1	Theory Classes	40		
2	Demonstrations & Lab Visit/ Experiment conduction	10		
3	Assignments/ Quizzes/ reports	2+3		
4	Tutorials/ Extra classes	-		
5	Internal Assessments	3		
6	ICT based Teaching. (% of usage in Curriculum)	80%		
Planning			Execution	
Faculty Signature:			Faculty Signature:	
HoD Signature:			HoD Signature:	