

LESSON PLAN.
ACADEMIC SESSION-WINTER 2025
3RD SEMESTER W.E.F-14/07/2025 Total Period :- 45
SUBJECT- FLUID MECHANICS & FLUID POWER (TH-4) Theory periods: 3 P/WE

SL NO	MONTH	Week	CLASS DAY	UNIT NO/PERIOD ALLOTTED	Topic to be covered as per Syllabus	Topic actually covered as
1	JULY	3RD	1ST	9	PROPERTIES OF A FLUID AND HYDROSTATICS	
2			2ND		Definition of a fluid, classification of fluids	
			3RD		various fluid properties such as density	
3		4TH	1ST		specific weight, specific gravity, viscosity and surface tension and state the units	
4			2ND		working of various measuring devices for pressure	
			3RD		principle of manometers of simple	
6		5TH	1ST		principle of buoyancy and floatation	
7			2ND		principle of buoyancy and floatation	
8			3RD		Simple numericals on Manometer.	
10	AUG	1ST	1ST	6	KINEMATICS AND DYNAMICS OF FLUID MECHANICS	
			2ND		Various types of flow	
11			3RD		law of conservation of mass	
13		2ND	1ST		working of venturimeter	
14			2ND		working of flowmeter	
		3RD	1ST		working of flowmeter	
17			2ND	9	FLOW THROUGH ORIFICES AND NOTCHES, PIPES	
18			3RD		Definition –orifice	
		4TH	1ST		Relationship between orifice coefficients	
19			2ND		Simple numericals	
20			3RD		Definition of a pipe	
23	SEP	1ST	1ST		laws of fluid friction	
24			2ND		Darcy's formula and Chezy's formula	
27		2ND	1ST		The condition of maximum power transmission through nozzle	
28			2ND		Expression for diameter of nozzle for maximum power transmission.	
29			3RD	12	Turbines and Pumps	
31		3RD	1ST		Classification of hydraulic turbines	
32			2ND		Classification of hydraulic turbines	
33			3RD		Construction and working principle of Pelton wheel, Francis and Kaplan turbines	
35		4TH	1ST		Centrifugal Pumps	
36			2ND		Principle of working and applications	
37			3RD		Types of casings and impellers	
39		5TH	1ST		Types of casings and impellers	
43		1ST	1ST		Reciprocating Pumps	
44			2ND		working principle and applications of single and double acting reciprocating pumps	
45			3RD		working principle and applications of single and double acting reciprocating pumps	

47	OCT	2ND	1ST	9	Cavitation and separation	
48			2ND		FLUID POWER	
49			3RD		Definition of fluid power	
51		3RD	1ST		classification – hydraulic power and pneumatic power	
			2ND		Hydraulic Systems -Basic principle of enclosed hydraulic system – Pascal’s law	
55			3RD		Hydraulic Systems -Basic principle of enclosed hydraulic system – Pascal’s law	
56		4TH	1ST		Oil hydraulic system – reservoir	
57			2ND		various positive displacement pumps-gear	
			3RD		Drawing of hydraulic circuits - extension and retraction of linear actuator	
	NOV	1ST	1ST		Drawing of hydraulic circuits - extension and retraction of linear actuator	
58			2ND		Final Review & Test	
			3RD		Final Review & Test	
59		2ND	1ST		Final Review & Test	
			2ND		Final Review & Test	
			3RD		Final Review & Test	

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LESSON PLAN. ACADEMIC SESSION-WINTER 2025 5TH SEMESTER W.E.F-14/07/2025 Total Period :- 60 SUBJECT- hydraulic machine and industrial fluid power (TH-3) Theory periods: 4 P/WEEK								
SL NO	MON TH	Week	CLASS DAY	UNIT NO/P ERIOD ALLO TED	Topic to be covered as per Syllabus	Topic actually covered as per Syllabus	Short fall if any/syllabus	remarks
1	JULY	3RD	1ST	15	1.0 HYDRAULIC TURBINES. 1.1 Definition and classification of hydraulic turbines			
2			2ND		1.0 HYDRAULIC TURBINES. 1.1 Definition and classification of hydraulic turbines			
			3RD		1.2 Construction and working principle of impulse turbine.			
			4TH		1.2 Construction and working principle of impulse turbine.			
3		4TH	1ST		1.3 Velocity diagram of moving blades, work done and derivation of various efficiencies of impulse turbine.			
4			2ND		1.3 Velocity diagram of moving blades, work done and derivation of various efficiencies of impulse turbine.			
			3RD		1.4 Velocity diagram of moving blades, work done and derivation of various efficiencies of Francis turbine.			
6		5TH	1ST		1.4 Velocity diagram of moving blades, work done and derivation of various efficiencies of Francis turbine.			
7			2ND		1.5 Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine			
8			3RD		1.5 Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine			
9			4TH		1.6 Numerical on above			
10	AUG	1ST	1ST		1.6 Numerical on above			
			2ND		1.6 Numerical on above			
			3RD		1.7 Distinguish between impulse turbine and reaction turbine.			
13		2ND	1ST		1.7 Distinguish between impulse turbine and reaction turbine.			
14			2ND	5	2.0 CENTRIFUGAL PUMPS 2.1 Construction and working principle of centrifugal pumps			
15			3RD		2.0 CENTRIFUGAL PUMPS 2.1 Construction and working principle of centrifugal pumps			
16			4TH		2.2 work done and derivation of various efficiencies of centrifugal pumps.			
		3RD	1ST		2.2 work done and derivation of various efficiencies of centrifugal pumps.			
17			2ND		2.3 Numerical on above			
18			3RD	20	3.0 RECIPROCATING PUMPS . 3.1 Describe construction & working of single acting reciprocating pump.			
19		4TH	1ST		3.0 RECIPROCATING PUMPS . 3.1 Describe construction & working of single acting reciprocating pump.			
20			2ND		3.2 Describe construction & working of double acting reciprocating pump.			
23		1ST	1ST		3.2 Describe construction & working of double acting reciprocating pump.			
24			2ND		3.3 Derive the formula for power required to drive the pump (Single acting & double acting)			
25			3RD		3.3 Derive the formula for power required to drive the pump (Single acting & double acting)			
26			4TH		3.5 Define slip.			
27		2ND	1ST		3.5 State positive & negative slip & establish relation between slip & coefficient of discharge.			
28			2ND		3.5 State positive & negative slip & establish relation between slip & coefficient of discharge.			
29			3RD		3.6 Solve numerical on above			

31	SEP	3RD	1ST	20	4.0 PNEUMATIC CONTROL SYSTEM 4.1 Elements –filter-regulator-lubrication unit			
32			2ND		4.2 Pressure control valves 4.2.1 Pressure relief valves 4.2.2 Pressure regulation valves			
33			3RD		4.2 Pressure control valves 4.2.1 Pressure relief valves 4.2.2 Pressure regulation valves			
34			4TH		4.3 Direction control valves 4.3.1 3/2DCV, 5/2 DCV, 5/3DCV			
35		4TH	1ST		4.3.2 Flow control valves 4.3.3. Throttle valves			
36			2ND		4.4 ISO Symbols of pneumatic components			
37			3RD		4.5. Pneumatic circuits 4.5.1 Direct control of single acting cylinder			
40		5TH	1ST		4.5.2 Operation of double acting cylinder 4.5.3 Operation of double acting cylinder with metering in and metering out control			
43	OCT	1ST	1ST		5.0 HYDRAULIC CONTROL SYSTEM			
44			2ND		5.1 Hydraulic system, its merit and demerits			
45		2ND	1ST		5.2 Hydraulic accumulators			
46			2ND		5.3.1 Pressure control valves 5.3.2 Pressure relief valves			
47			3RD		5.3.3 Pressure regulation valves			
48			4TH		5.3 Direction control valves			
49		3RD	1ST		5.3.2 Flow control valves 5.3.3 Throttle valves			
50			2ND		5.4 Fluid power pumps			
51		4TH	1ST		5.4.1 External and internal gear pumps			
			2ND		5.4.2 Vane pump			
55			3RD		5.4.3 Radial piston pumps			
56			4TH		5.5 ISO Symbols for hydraulic components.			
57	NOV	1ST	1ST		5.6 Actuators			
			2ND		5.7 Hydraulic circuits			
58		2ND	1ST		5.7.1 Direct control of single acting cylinder			
			2ND		5.7.1 Direct control of single acting cylinder			
			3RD		5.7.2 Operation of double acting cylinder			
			4TH		5.7.3 Operation of double acting cylinder with metering in and metering out control			
					5.7.3 Operation of double acting cylinder with metering in and metering out control			
					5.8 Comparison of hydraulic and pneumatic system			

LESSON PLAN. ACADEMIC SESSION-WINTER 2025 3RD SEMESTER W.E.F-14/07/2025 Total Period :- 45 SUBJECT- MATERIAL SCIENCE & ENGINEERING (TH-3) Theory periods: 3 P/WEEK							
SL NO	MONTH	Week	CLASS DAY	UNIT NO/PERIOD ALLOTTED	Topic to be covered as per Syllabus	Topic actually covered	Short fall if any/syllabus
1	JULY	3RD	1ST	10	Crystal structures and Bonds:		
2			2ND		Crystal structures and Bonds:		
3			3RD		Unit cell and space lattice		
4		4TH	1ST		Unit cell and space lattice		
5			2ND		Crystal system		
6			3RD		Atomic radius		
7		5TH	1ST		Atomic radius		
8			2ND		Bonds in solids		
9			3RD		Types of primary bonds		
10	AUG	1ST	1ST	9	Types of primary bonds		
11			2ND		Phase diagrams, Ferrous metals and its Alloys		
12			3RD		Phase diagrams, Ferrous metals and its Alloys		
13		2ND	1ST		Phase diagrams, Ferrous metals and its Alloys		
14			2ND		Cast Iron: classification, composition, properties and uses		
15		3RD	1ST		Wrought Iron		
16			2ND		Silicon steel, High Speed Steel (HSS), heat resisting steel, spring steel, Stainless Steel (SS)		
17			3RD		Silicon steel, High Speed Steel (HSS), heat resisting steel, spring steel, Stainless Steel (SS)		
18		4TH	1ST		Silicon steel, High Speed Steel (HSS), heat resisting steel, spring steel, Stainless Steel (SS)		
19			2ND		Silicon steel, High Speed Steel (HSS), heat resisting steel, spring steel, Stainless Steel (SS)		
20		1ST	1ST	9	Non-ferrous metals and its Alloys		
21			2ND		Copper alloys		
22		2ND	1ST		Copper alloys		
23			2ND		Aluminum alloys		
24			3RD		Aluminum alloys		

25	SEP	3RD	1ST	9	Nickel alloys		
26			2ND		Nickel alloys		
27			3RD		Anti-friction/Bearing alloys		
28		4TH	1ST		Anti-friction/Bearing alloys		
29			2ND		Failure analysis & Testing of Materials		
30			3RD		Fracture		
31		5TH	1ST		Fracture		
32	OCT	1ST	1ST	9	Destructive testing		
33			2ND		Destructive testing		
34			3RD		Destructive testing		
35		2ND	1ST		Nondestructive testing		
36			2ND		Nondestructive testing		
37			3RD		Nondestructive testing		
38		3RD	1ST	8	Corrosion & Surface Engineering		
39			2ND		Factors affecting corrosion		
40			3RD		Factors affecting corrosion		
41		4TH	1ST		Corrosion control		
42			2ND		Surface engineering processes		
43			3RD		Surface engineering processes		
44	NOV	1ST	1ST		Conversion coatings		
45			2ND		Thin film coatings		
46		2ND	1ST		Final Review & Test		
47			2ND		Final Review & Test		
48			3RD		Final Review & Test		

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