

BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF MECHANICAL ENGINEERING



LESSON PLAN

SUBJECT: HYDRAULIC MACHINE AND INDUSTRIAL FLUID POWER
FACULTY: MRS SUNITA SAMAL

ACCADEMIC SESSION: 2024-25(W)
SEMESTER: 5TH
SEC: B

H O D (Mech. Engrg.)

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DISCIPLINE: MECHANICAL ENGINEERING SUBJECT: HYDRAULIC MACHINES AND INDUSTRIAL FLUID POWER	SEMESTER: 5 TH (B)	NAME OF THE TEACHING FACULTY: MRS SUNITA SAMAL	
	NO. OF DAYS/ PER WEEK CLASS ALLOTTED: 04 PERIODS PER WEEK (Mon-2 period , Wed-2 period)	SEMESTER FROM DATE: 01-07-2024 TO DATE: 08-11-2024 NO. OF WEEKS: 19WEEKS	
WEEK	CLASS DAY	NO OF PERIOD AVAILABLE	THEORY TOPICS
1 ST (4)	01/07/24	1	Introduction , Syllabus Discussion
	01/07/24	1	1.0 HYDRAULIC TURBINES
	03/07/24	1	1.1 Definition and classification of hydraulic turbines
	03/07/24	1	1.1 Definition and classification of hydraulic turbines
2 ND (4)	03/07/24	1	1.2 Construction and working principle of impulse turbine.
	08/07/24	1	1.2 Construction and working principle of impulse turbine
	08/07/24	1	1.3 Velocity diagram of moving blades, work done and derivation of various efficiencies of impulse turbine.
	10/07/24	1	1.3 Velocity diagram of moving blades, work done and derivation of various efficiencies of impulse turbine.
3 RD (2)	10/07/24	1	1.4 Velocity diagram of moving blades, work done and derivation of various efficiencies of Francis turbine.
	15/07/24	1	1.4 Velocity diagram of moving blades, work done and derivation of various efficiencies of Francis turbine.
	15/07/24	1	1.5 Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine
	15/07/24	1	1.5 Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine
4 TH (4)	22/07/24	1	1.5 Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine
	22/07/24	1	1.6 Numerical on above



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	24/07/24	1	1.6 Numerical on above
	24/07/24	1	1.7 Distinguish between impulse turbine and reaction turbine.
	29/07/24	1	2.0 CENTRIFUGAL PUMPS
	29/07/24	1	2.1 Construction and working principle of centrifugal pumps
5 TH (4)	31/07/24	1	2.1 Construction and working principle of centrifugal pumps
	31/07/24	1	2.2 work done and derivation of various efficiencies of centrifugal pumps.
	31/07/24	1	2.2 work done and derivation of various efficiencies of centrifugal pumps
	05/08/24	1	2.2 work done and derivation of various efficiencies of centrifugal pumps.
6 TH (4)	05/08/24	1	CLASS TEST-1
	07/08/24	1	2.2 work done and derivation of various efficiencies of centrifugal pumps.
	07/08/24	1	2.3 Numerical on above
	12/08/24	1	2.3 Numerical on above
	12/08/24	1	2.3 Numerical on above
7 TH (4)	12/08/24	1	3.0 RECIPROCATING PUMPS
	14/08/24	1	3.1 Describe construction & working of single acting reciprocating pump.
	12/08/24	1	3.2 Describe construction & working of double acting reciprocating pump.
	14/08/24	1	3.3 Derive the formula for power required to drive the pump (Single acting & double acting)
	14/08/24	1	3.3 Derive the formula for power required to drive the pump (Single acting & double acting)
	21/08/24	1	3.5 Define slip.
8 TH (2)	21/08/24	1	3.5 State positive & negative slip & establish relation between slip & coefficient of discharge.
	21/08/24	1	3.6 Solve numerical on above
9 TH (2)	28/08/24	1	4.0 PNEUMATIC CONTROL SYSTEM
	28/08/24	1	4.1 Elements – filter–regulator–lubrication unit

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	28/08/24	1	4.2 Pressure control valves 4.2.1 Pressure relief valves 4.2.2 Pressure regulation valves
	02/09/24	1	4.3 Direction control valves 4.3.1 3/2DCV,5/2 DCV,5/3DCV
10 TH (4)	02/09/24	1	4.3.2 Flow control valves
	04/09/24	1	4.3.3 Throttle valves
	04/09/24	1	4.4 ISO Symbols of pneumatic components
	09/09/24	1	4.5 Pneumatic circuits 4.5.1 Direct control of single acting cylinder
11 TH (4)	09/09/24	1	INTERNAL ASSESSMENT-I
	09/09/24	1	4.5.2 Operation of double acting cylinder
	11/09/24	1	4.5.3 Operation of double acting cylinder with metering in and metering out control
	11/09/24	1	4.5.3 Operation of double acting cylinder with metering in and metering out control
12 TH (2)	18/09/24	1	5.0 HYDRAULIC CONTROL SYSTEM
	18/09/24	1	5.1 Hydraulic system, its merit and demerits
	23/09/24	1	5.2 Hydraulic accumulators
	23/09/24	1	5.2.1 Pressure control valves
13 TH (4)	23/09/24	1	5.2.2 Pressure relief valves
	23/09/24	1	5.2.3 Pressure regulation valves
	25/09/24	1	5.3 Direction control valves
	25/09/24	1	5.3.1 3/2DCV,5/2 DCV,5/3DCV
14 TH (4)	25/09/24	1	5.3.2 Flow control valves
	30/9/24	1	5.3.3 Throttle valves
	30/9/24	1	5.4 Fluid power pumps
15 TH	30/9/24	1	5.4.1 External and internal gear pumps
			PUJA VACATION



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16 TH (4)	14/10/24	1	5.4.1 External and internal gear pumps
	14/10/24	1	5.4.2 Vane pump
	21/10/24	1	5.4.3 Radial piston pumps
	21/10/24	1	5.5 ISO Symbols for hydraulic components.
17 TH (4)	23/10/24	1	5.6 Actuators
	23/10/24	1	5.7 Hydraulic circuits
	28/10/24	1	5.7.1 Direct control of single acting cylinder
	28/10/24	1	5.7.2 Operation of double acting cylinder
18 TH (3)	28/10/24	1	5.7.3 Operation of double acting cylinder with metering in and metering out control
	30/10/24	1	5.8 Comparison of hydraulic and pneumatic system
	30/10/24	1	DOUBT CLEARING CLASS
	30/10/24	1	DOUBT CLEARING CLASS
	04/11/24	1	DOUBT CLEARING CLASS
	04/11/24	1	CLASS TEST-II
19 TH (4)	06/11/24	1	Revision
	06/11/24	1	Revision
	06/11/24	1	Previous year question discussion

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