BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

SUBJECT: HYDRAULIC MACHINES & INDUSTRIAL FLUID POWER (TH 3)

FACULTY: NARESH KUMAR PRADHAN

ACCADEMIC SESSION: 2022-23

SEMESTER: 5th

SEC: B

FACULTY SIGNATURE

HOD SIGNATURE

BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF MECHANICAL ENGINEERING
LESSON PLAN

DISCIPLINE: **Mechanical Engineering**	**SEMESTER: 5th B**		**NAME OF TEACHING FACULTY: N.K. Pradhan**
SUBJECT: (TH-2) HYDRAULIC MACHINES &INDUSTRIAL FLUID POWER	**No. of Days/ per week class allotted: 04 periods per week** **TUE-1Period, WED-1Period, FRI-1Period, SAT-1Period**		**Semester From Date: 15-09-2022 To Date: 21-01-2023** **No. of weeks: 17 weeks**
Week	**Class Day**	**No of period available**	**Theory Topics**
1st	16/09/2022	1	1.1 Definition of hydraulic turbines
	17/09/2022	1	1.1 classification of hydraulic turbines
2nd	20/09/2022	1	1.2 Construction of impulse turbine
	21/09/2022	1	1.2 working principle of impulse turbine
	23/09/2022	1	1.3 Velocity diagram of moving blades
	24/09/2022	1	1.3 work done of impulse turbine
3rd	27/09/2022	1	1.3 derivation of various efficiencies of impulse turbine
	28/09/2022	1	1.3 Numerical on above
	30/09/2022	1	1.4 Velocity diagram of moving blades and work done of Francis turbine

	01/09/2022	1	1.4 derivation of various efficiencies of Francis turbine
4th	11/10/2022	1	1.4 Numerical on above
	12/10/2022	1	1.5 Velocity diagram of moving blades and work done of Kaplan turbine
	14/10/2022	1	1.5 derivation of various efficiencies of Kaplan turbine
	15/10/2022	1	1.6 Numerical on above
5th	18/10/2022	1	1.7 Distinguish between impulse turbine and reaction turbine.
	19/10/2022	1	2.1 Construction and working principle of centrifugal pumps
	21/10/2022	1	2.2 work done of centrifugal pumps
	22/10/2022	1	2.2 derivation of various efficiencies of centrifugal pumps
6th	25/10/2022	1	2.3 Numerical on above
	26/10/2022		**Monthly Class Test 1**
	28/10/2022	1	3.1 Describe construction and working of single acting reciprocating pump
	29/10/2022	1	3.2 Describe construction and working of double acting reciprocating pump
7th	01/10/2022	1	3.3 Derive the formula for power required to drive the pump (Single acting)
	02/11/2022	1	3.3 Derive the formula for power required to drive the pump (double acting)
	04/11/2022	1	3.5 Define slip, State positive & negative slip &amp

	05/11/2022	1	3.5 Establish relation between slip & coefficient of discharge.
8th	08/11/2022	1	3.6 Solve numerical on above
	09/11/2022	1	4.1 Elements –filter-regulator-lubrication unit
	11/11/2022	1	4.2 Pressure control valves
	12/11/2022		4.2.1 Pressure relief valves 4.2.2 Pressure regulation valves
9th	15/11/2022	1	4.3 Direction control valves
	16/11/2022	1	4.3.1 3/2DCV,
	18/11/2022	1	**Internal Assessment**
	19/11/2022	1	4.3.1 5/2 DCV,5/3DCV
10th	22/11/2022	1	4.3.2 Flow control valves
	23/11/2022	1	4.3.3. Throttle valves
	25/11/2022	1	4.4 ISO Symbols of pneumatic components
	26/11/2022	1	4.5. Pneumatic circuits
11th	29/11/2022	1	4.5.2 Operation of double acting cylinder
	30/11/2022	1	4.5.3 Operation of double acting cylinder with metering in and metering out control
	02/12/2022	1	**Monthly Class Test 2**
	03/12/2022	1	5.1 Hydraulic system, its merit and demerits
12th	06/12/2022	1	5.2 Hydraulic accumulators
	07/12/2022	1	5.2.1 Pressure control valves
	09/12/2022	1	5.2.2 Pressure relief valves
	10/12/2022	1	5.2.3 Pressure regulation valves
13th	13/12/2022	1	5.3 Direction control valves

	14/12/2022	1	5.3.1 3/2DCV, 5/2 DCV,5/3DCV
	16/12/2022	1	5.3.2 Flow control valves
	17/12/2022	1	5.3.3 Throttle valves
14th	20/12/2022	1	5.4 Fluid power pumps
	21/12/2022	1	5.4.1 External and internal gear pumps
	23/12/2022	1	5.4.2 Vane pump
	24/12/2022	1	5.4.3 Radial piston pumps
15th	03/01/2023	1	5.5 ISO Symbols for hydraulic components.
	04/01/2023	1	5.5 ISO Symbols for hydraulic components.
	06/01/2023	1	5.6 Actuators
	07/01/2023	1	5.7 Hydraulic circuits
16th	10/01/2023	1	5.7.1 Direct control of single acting cylinder
	11/01/2023	1	5.7.2 Operation of double acting cylinder
	13/01/2023	1	5.8 Comparison of hydraulic and pneumatic system
17th	17/01/2023	1	**Revision**
	18/01/2023	1	**Revision**
	20/01/2023	1	**Previous Year Question discussion**
	21/01/2023	1	**Previous Year Question discussion**