ASIAN SCHOOL OF TECHNOLOGY, KHORDA
Department of Mechanical Engineering

Lesson Plan		
Discipline: Mechanical Engineering	**Name of the teaching faculty:** Priya Ranjan Pattanaik	
Subject: Hydraulic Machine And Industrial Fluid Power	**SEM- 5TH** **SESSION- 2024-25**	
4 periods per week, total 60 periods in Semester		
CLASSES	**TOPICS**	**WEEK**
1. HYDRAULIC TURBINES [15 Periods]		1ST
1	Definition and classification of hydraulic turbines.	
2	Construction and working principle of impulse turbine.	
3	Construction and working principle of impulse turbine.	
4	Velocity diagram of moving blades, work done and derivation of various efficiencies of impulse turbine.	
5	Velocity diagram of moving blades, work done and derivation of various efficiencies of impulse turbine.	2ND
6	Velocity diagram of moving blades, work done and derivation of various efficiencies of Francis turbine.	
7	Velocity diagram of moving blades, work done and derivation of various efficiencies of Francis turbine.	
8	Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine	
9	Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine	3RD
10	Numerical on above	

11	Numerical on above	
12	Numerical on above	
13	Numerical on above	4TH
14	Numerical on above	
15	Distinguish between impulse turbine and reaction turbine.	
2.CENTRIFUGAL PUMPS[5 periods]		
1	Construction and working principle of centrifugal pumps	
2	work done and derivation of various efficiencies of centrifugal pumps	5TH
3	work done and derivation of various efficiencies of centrifugal pumps	
4	Numerical on above	
5	Numerical on above	
3. RECIPROCATING PUMPS [5 periods]		6TH
1	Describe construction & working of single acting reciprocating pump.	
2	Describe construction & working of double acting reciprocating pump	
3	Derive the formula foe power required to drive the pump (Single acting & double acting),Define slip	
4	State positive & negative slip & establish relation between slip & coefficient of discharge	
5	Solve numerical on above	7TH
4.PNEUMATIC CONTROL SYSTEM[15 Periods]		
1	Elements –filter-regulator-lubrication unit	
2	Pressure control valves Pressure relief valves	
3	Pressure control valves Pressure relief valves	
4	Pressure control valves Pressure regulation valves	8TH

5	Direction control valves 4.3.1 3/2DCV,5/2 DCV,5/3DCV	
6	Direction control valves 4.3.1 3/2DCV,5/2 DCV,5/3DCV	
7	Flow control valves	
8	Throttle valves Throttle valves	9TH
9	ISO Symbols of pneumatic components	
10	ISO Symbols of pneumatic components	
11	Pneumatic circuits Direct control of single acting cylinder	
12	Pneumatic circuits Direct control of single acting cylinder	10TH
13	Operation of double acting cylinder	
14	Operation of double acting cylinder metering in and metering out control	
15	Operation of double acting cylinder metering in & metering out control	
5.HYDRAULIC CONTROL SYSTEM [20 periods]		11TH
1	Hydraulic system, its merit and demerits	
2	Hydraulic system, its merit and demerits	
3	Hydraulic accumulators Pressure control valves	
4	Hydraulic accumulators Pressure control valves	
5	Pressure relief valves ,Pressure regulation valves	12TH
6	Direction control valves 3/2DCV,5/2 DCV,5/3DCV	
7	Direction control valves 3/2DCV,5/2 DCV,5/3DCV	
8	Flow control valves ,Throttle valve	
9	Flow control valves ,Throttle valve	13TH
10	Fluid power pumps External and internal gear pumps	

11	Fluid power pumps External and internal gear pumps	
12	Vane pump	
13	Radial piston pump	14TH
14	ISO Symbols for hydraulic components	
15	Actuators	
16	Hydraulic circuits Direct control of single acting cylinder	
17	Hydraulic circuits Operation of double acting cylinder	15TH
18	Operation of double acting cylinder with metering in and metering out control	
19	Operation of double acting cylinder with metering in and metering out control	
20	Comparison of hydraulic and pneumatic system	