NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)

LESSON PLAN

SUBJECT: HYDRAULIC MACHINE & INDUSTRIAL FLUID POWER(TH-3)

Name Of The Faculty :- Er. Bishnu Charan Jena
Branch :- Mechanical Engineering **Semester :-** 5th
Academic Year : 2025-26 **Examination :-** 2025 (W)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	HYDRAULIC TURBINES	15	17
2	CENTRIFUGAL PUMPS	5	9
3	PNEUMATIC SYSTEM	20	24
4	HYDRAULIC SYSTEM	20	25
	Total Period:	60	75

10/07/2025

sign of the faculty

10/07/2025

Sign of H.O.D

Name of the programme: Diploma in MECHANICAL ENGINEERI9NG	Semester: 5th	**Name of the Teaching Faculty:** Er. Bishnu Charan Jena	
		Academic Year : 2025-26 **Examination :** 2025 (W)	
Course Code: TH-3	**Course Year:** Third Year	**No. of Classes Alloted Per Week :**	5
		Planned Classes Required to Complete the Course	75

Week	Class Day	Topics To be Covered
1st	1st	1.1 Definition and classification of hydraulic turbines
	2nd	1.1 Definition and classification of hydraulic turbines
	3rd	1.1 Construction and working principle of impulse turbine.
	4th	1.1 Construction and working principle of impulse turbine.
	5th	1.1 Velocity diagram of moving blades, work done and derivation of various efficiencies of Francis turbine.
2nd	1st	1.1 Velocity diagram of moving blades, work done and derivation of various efficiencies of Francis turbine.
	2nd	1.1 Velocity diagram of moving blades, work done and derivation of various efficiencies of Francis turbine.
	3rd	1.5 Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine
	4th	1.5 Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine
	5th	1.5 Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine
3rd	1st	Velocity diagram of moving blades, work done and derivation of various efficiencies of Francis turbine.
	2nd	Velocity diagram of moving blades, work done and derivation of various efficiencies of Francis turbine.
	3rd	Numerical on above
	4th	Numerical on above
	5th	Numerical on above
4th	1st	Distinguish between impulse turbine and reaction turbine.
	2nd	Distinguish between impulse turbine and reaction turbine.
	3rd	work done and derivation of various efficiencies of centrifugal pumps
	4th	Numerical on above
	5th	CENTRIFUGAL PUMPS

Week	Class Day	Topics To be Covered
5th	1st	Construction and working principle of centrifugal pumps
	2nd	Construction and working principle of centrifugal pumps
	3rd	RECIPROCATING PUMPS
	4th	Describe construction & working of double acting reciprocating pump
	5th	Describe construction & working of double acting reciprocating pump
6th	1st	Describe construction & working of double acting reciprocating pump
	2nd	Derive the formula foe power required to drive the pum
	3rd	(Single acting & double acting)
	4th	Define slip
	5th	State positive & negative slip & establish relation between slip & coefficient of discharge.
7th	1st	State positive & negative slip & establish relation between slip & coefficient of discharge.
	2nd	State positive & negative slip & establish relation between slip & coefficient of discharge.
	3rd	Solve numerical on above
	4th	Solve numerical on above
	5th	Solve numerical on above
8th	1st	PNEUMATIC CONTROL SYSTEM
	2nd	Elements –filter-regulator-lubrication unit
	3rd	Pressure relief valves
	4th	Pressure relief valves
	5th	Pressure regulation valves
9th	1st	Pressure regulation valves
	2nd	Direction control valves
	3rd	3/2DCV,5/2 DCV,5/3DCV
	4th	3/2DCV,5/2 DCV,5/3DCV
	5th	Flow control valves
10th	1st	Throttle valves
	2nd	Throttle valves

Week	Class Day	Topics To be Covered
10th	3rd	ISO Symbols of pneumatic components
	4th	ISO Symbols of pneumatic components
	5th	Direct control of single acting cylinder
11th	1st	Direct control of single acting cylinder
	2nd	*Operation of double acting cylinder*
	3rd	Operation of double acting cylinder with metering in and metering out control
	4th	HYDRAULIC CONTROL SYSTEM
	5th	HYDRAULIC CONTROL SYSTEM
12th	1st	Hydraulic system, its merit and demerits
	2nd	Hydraulic system, its merit and demerits
	3rd	Hydraulic system, its merit and demerits
	4th	Hydraulic accumulators
	5th	Pressure control valves
13th	1st	Pressure relief valves
	2nd	Pressure regulation valves
	3rd	3/2DCV,5/2 DCV,5/3DCV
	4th	3/2DCV,5/2 DCV,5/3DCV
	5th	Throttle valves
14th	1st	Throttle valves
	2nd	Fluid power pumps
	3rd	Fluid power pumps
	4th	ISO Symbols for hydraulic components.
	5th	ISO Symbols for hydraulic components.
15th	1st	Direct control of single acting cylinder
	2nd	Operation of double acting cylinder with metering in and metering out control
	3rd	Comparison of hydraulic and pneumatic system
	4th	Comparison of hydraulic and pneumatic system
	5th	Operation of double acting cylinder with metering in and metering out control

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