

GOVERNMENT POLYTECHNIC JAIPUR
A/ P: Ragadi, Block: Korei, Dist.: Jajpur, Odisha- 755019

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

Discipline: Mechanical	Semester: 6th	Name of the Teaching faculty: Suprava Behera
PSE	No of Days/Week class alloted: 3	Semester from Date: 04.02.2025 To Date: 17.05.2025 No of weeks: 15
SL.NO	Class/Day	TOPICS TO BE COVERED
1	1st	Introduction to Power station Engineering , course outcomes, exam, class tests, assignment
	2nd	Describe different sources of energy.
	3rd	Concept of Central and Captive power station, Classification of power plants.
	4th	Importance of electrical power in day today life with example
2	1st	Overview of method of electrical power generation.
	2nd	Layout of steam power stations
	3rd	Explanation of Carnot vapour power cycle with P-V, T-s diagram and determination of thermal efficiency.
	4th	Numericals on Carnot vapour power cycle
3	1st	Explanation of Rankine cycle with P-V, T-S & H-s diagram
	2nd	Determination of thermal efficiency, Work done, work ratio, and specific steam Consumption of Rankine cycle.
	3rd	Numericals on Rankine cycle.
	4th	List of thermal power stations in the state with their capacities.
4	1st	Boiler Accessories: Operation of Air pre heater, Economiser
	2nd	Boiler Accessories: Operation of Electrostatic precipitator and super heater
	3rd	Need of boiler mountings and operation of boiler
	4th	Draught systems -Natural draught with its advantages & disadvantages.
5	1st	Draught systems- Forced draught & Balanced draught with its advantages & disadvantages.
	2nd	Steam prime movers: Advantages & disadvantages of steam turbine, Elements of steam turbine.
	3rd	Governing of steam turbine , Performance of steam turbine- Explanation of Thermal efficiency, Stage efficiency and Gross efficiency
	4th	Steam condenser: Function of steam condenser and classification

6	1st	Function of surface condenser (down flow type),and surface condenser (centrifugal,Inverted type)
	2nd	Function of surface condenser(Regenerative, Evaporative type)and jet condenser
	3rd	Function of condenser auxiliaries such as hot well, condenser extraction pump, air extraction pump, and circulating pump.
	4th	Cooling Tower: Function and types of cooling tower (Natural draught cooling tower & Mechanical draught cooling tower
7	1st	Function of spray ponds and Selection of site for thermal power stations.
	2nd	Review class
	3rd	Assignment evaluation/Class test
	4th	Introduction to Nuclear power plant,Classification of nuclear fuel (Fissile & fertile material)
8	1st	Fusion and fission reaction
	2nd	Description of nuclear energy sources
	3rd	Working of nuclear power plants with block diagram
	4th	Working and construction of nuclear reactor
9	1st	Essential components details of nuclear reactor
	2nd	Comparison between thermal power plant and nuclear power plant, disposal method of nuclear waste
	3rd	Selection of site for nuclear power stations, List of nuclear power stations
	4th	CLASS TEST/ASSIGNMENT
10	1st	Introduction to Diesel power stations,Layout of Diesel electric power stations with advantages and disadvantages.
	2nd	Different systems of diesel electric power stations: Fuel storage and fuel supply system.
	3rd	Fuel Injection system of diesel electric power stations
	4th	Air supply and Exhaust systemsystem of diesel electric power stations

11	1st	Cooling system of diesel electric power stations
	2nd	Lubrication system, starting system of diesel electric power stations
	3rd	Governing system of diesel electric power stations
	4th	Selection of site for diesel electric power stations, Performance and thermal efficiency of diesel electric power stations
12	1st	Introduction to Hydel power stations and Layout of Hydel power stations with advantages and disadvantages
	2nd	Classification of Hydel power stations
	3rd	Storage type hydroelectric project and its operation.
	4th	Selection of site of hydel power plant
13	1st	List of hydro power stations with their capacities and number of units in the state.
	2nd	Classification of turbines used for hydel power stations.
	3rd	Working principle of Impulse turbine & Reaction turbine
	4th	Solve Simple Problems and exercise problems on above
14	1st	Layout of Gas Turbine power stations
	2nd	Selection of site for gas turbine stations.
	3rd	Types of Fuels used for gas turbine power stations
	4th	Elements of simple gas turbine power plants
15	1st	Advantages and disadvantages of gas turbine power plants and its application.
	2nd	Review class
	3rd	CLASS TEST/ASSIGNMENT
	4th	Discussion of previous year questions.

E.LEARNING RESOURCES:			
SL No.	Name of Authors	Title of the Book	Name of the Publisher
1	R.K Rajput	Power Plant Engineering	Laxmi Publication
2	P.K.NAG	Power Plant Engineering	TMH
3	Nag pal G,R	Power plant Engineering	Khanna Publisher
4	P.C.SHARMA	Power Plant Engineering	S.K KATARIA & SONS


 03.02.2025
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