LESSON PLAN

6th SEMESTER MECHANICAL ENGINEERING (2023-24)

SUBJECT- POWER STATION ENGINEERING (TH.3)

(w.e.f 16/01/2024)

Name of Faculty: Himanshu Patra , Lect. (GF)

TOTAL PERIODS-60
THEORY-4P/WEEK

Sl No.	week	Day	Topics to be covered
1	1st	1st day	INTRODUCTION: Describe sources of energy.
		2nd day	Explain concept of Central and Captive power station.
		3rd day	Classify power plants.
		4th day	Importance of electrical power in day today life
Sl No.	**week**	**Day**	**Topics to be covered**
2	2nd	1st day	Overview of method of electrical power generation
		2nd day	THERMAL POWER STATIONS
		3rd day	Layout of steam power stations
		4th day	Steam power cycle.
Sl No.	**week**	**Day**	**Topics to be covered**
3	3rd	1st day	Explain Carnot vapour power cycle with P-V, T-s diagram and determine thermal efficiency.
		2nd day	Explain Rankine cycle with P-V, T-S & H-s diagram and determine thermal efficiency, Work done, work ratio, and specific steam Consumption
		3rd day	Solve Simple Problems.
		4th day	List of thermal power stations in the state with their capacities.
Sl No.	**week**	**Day**	**Topics to be covered**
4	4th	1st day	Boiler Accessories
		2nd day	Operation of Air pre heater, Operation of Economiser, Operation Electrostatic precipitator and Operation of super heater
		3rd day	Need of boiler mountings
		4th day	operation of boiler
Sl No.	**week**	**Day**	**Topics to be covered**
5	5th	1st day	Draught systems (Natural draught, Forced draught & balanced draught) with their advantages & disadvantages
		2nd day	Natural draught, Forced draught & balanced draught) with their advantages & disadvantages
		3rd day	Steam prime movers
		4th day	Advantages & disadvantages of steam turbine
Sl No.	**week**	**Day**	**Topics to be covered**
6	6th	1st day	Elements of steam turbine
		2nd day	governing of steam turbine
		3rd day	Performance of steam turbine
		4th day	Explain Thermal efficiency, Stage efficiency and Gross efficiency.
Sl No.	**week**	**Day**	**Topics to be covered**

7	7th	1st day	Assignment evaluation and discussion
		2nd day	Steam condenser Function of condenser,
		3rd day	Classification of condenser
		4th day	function of condenser auxiliaries
Sl No.	**week**	**Day**	**Topics to be covered**
8	8th	1st day	hot well, condenser extraction pump
		2nd day	air extraction pump, and circulating pump.
		3rd day	Cooling Tower
		4th day	Function and types of cooling tower,
Sl No.	**week**	**Day**	**Topics to be covered**
9	9 th	1st day	spray ponds
		2nd day	Selection of site for thermal power stations
		3rd day	NUCLEAR POWER STATIONS
		4th day	Classify nuclear fuel (Fissile & fertile material)
Sl No.	**week**	**Day**	**Topics to be covered**
10	10th	1st day	Explain fusion and fission reaction.
		2nd day	Explain working of nuclear power plants with block diagram .
		3rd day	Explain the working and construction of nuclear reactor
		4th day	Compare the nuclear and thermal plants.
Sl No.	**week**	**Day**	**Topics to be covered**
11	11th	1st day	Explain the disposal of nuclear waste.
		2nd day	Selection of site for nuclear power stations
		3rd day	List of nuclear power stations.
		4th day	DIESEL ELECTRIC POWER STATIONS:
Sl No.	**week**	**Day**	**Topics to be covered**

12	12th	1st day	State the advantages and disadvantages of diesel electric power stations.
		2nd day	Explain briefly different systems of diesel electric power stations: Fuel storage and fuel supply system, Fuel injection system, Air supply system, Exhaust system, cooling system, Lubrication system, starting system, governing system.
		3rd day	Selection of site for diesel electric power stations.
		4th day	Performance and thermal efficiency of diesel electric power stations.
Sl No.	**week**	**Day**	**Topics to be covered**
13	13th	1st day	HYDEL POWER STATIONS: State advantages and disadvantages of hydroelectric power plant
		2nd day	Classify and explain the general arrangement of storage type hydroelectric project and explain its operation
		3rd day	Selection of site of hydel power plant.
		4th day	List of hydro power stations with their capacities and number of units in the state.
Sl No.	**week**	**Day**	**Topics to be covered**
14	14th	1st day	Types of turbines and generation used
		2nd day	Simple problems.
		3rd day	GAS TURBINE POWER STATIONS : Selection of site for gas turbine stations.
		4th day	Fuels for gas turbine
Sl No.	**week**	**Day**	**Topics to be covered**
15	15th	1st day	Elements of simple gas turbine power plants
		2nd day	Merits, demerits and application of gas turbine power plants
		3rd day	Doubt clearance and Revision
		4th day	Revision

15/01/2024
Lect. (AF)