

KIIT POLYTECHNIC, BHUBANESWAR

LESSON PLAN

Session (2023-2024)

Discipline: Mechanical Engineering	Semester: 6 th , Summer/2024	Name of the Teaching Faculty: Prasant Kumar Patra, Lecturer Email ID: pkpatrafme@kp.kiit.ac.in
Subject: Power Station Engineering, Theory-3	No. of Days/Week: 04	Start Date: 16/01/2024 End Date: 26/04/2024

Week	Class Day	Theory/Practical Topics
1st	1st	Different sources of energy. Introduction to Power Plants. Classification of power plants.
	2nd	Concept of Central and Captive power station. Importance of electrical power in day today life.
	3rd	Various methods of electrical power generation
	4th	Layout of steam power station
2nd	1st	Explanations of Carnot vapour power cycle with P-V, T-s diagram and determination of thermal efficiency.
	2nd	Numerical on Carnot vapour power cycle
	3rd	Explanations of Rankine cycle with P-V, T-s and H-s diagram and study of performance of steam power plant
	4th	Determination of thermal efficiency, work done, work ratio, and specific steam Consumption for Rankine cycle
3rd	1st	Numerical on Rankine cycle
	2nd	Boiler – its function, types and operation
	3rd	Boiler mountings – need, types and their functions
	4th	Boiler Accessories: Operation of Air pre heater, Economiser, super heater, Electrostatic precipitator
4th	1st	Steam prime movers: Advantages & disadvantages of steam turbine, Elements of steam turbine, Classification
	2nd	Working of steam turbines. Performance of steam turbine– Explain Thermal efficiency, Stage efficiency and Gross efficiency.
	3rd	Governing of steam turbine.
	4th	Steam condenser: Function of condenser, Classification of condenser.
5th	1st	Function of condenser auxiliaries such as hot well, condenser extraction pump, air extraction pump, and circulating pump.
	2nd	Cooling Tower: Function and types of cooling tower, and spray ponds
	3rd	Draught systems (Natural draught, Forced draught & balanced draught) with their advantages & disadvantages
	4th	Selection of site for thermal power stations. List of thermal power stations in the state with their capacities

6th	1st	<i>Class Test, Assignment-1</i>
	2nd	<i>Doubt Clearing Class</i>
	3rd	<i>Doubt Clearing Class</i>
	4th	<i>QUIZ Test-1</i>
7th	1st	Introduction to Nuclear Power plant. Classification of nuclear fuels (Fissile & fertile material). Fusion and Fission reactions. Nuclear energy.
	2nd	Elements of nuclear power plants & Block diagram, Working
	3rd	Working and construction of nuclear reactor
	4th	List of nuclear power stations. Compare the nuclear and thermal plants.
8 th	1st	Explain the disposal of nuclear waste. Selection of site for nuclear power stations
	2nd	Introduction to diesel electric power stations. Advantages and disadvantages of diesel electric power stations.
	3rd	Components of diesel electric power stations.
	4th	Fuel storage and fuel supply system, Fuel injection system
9 th	1st	Air supply system, Exhaust system and Starting system
	2nd	Cooling and lubrication system
	3rd	Governing system. Selection of site for diesel electric power stations
	4th	Performance and thermal efficiency of diesel electric power stations
10 th	1st	Numerical
	2nd	<i>Doubt Clearing Class</i>
	3rd	Introduction to hydroelectric power plant and its advantages and disadvantages.
	4th	General arrangement of storage type hydroelectric project and its operation.
11 th	1st	Selection of site of hydel power plant
	2nd	List of hydro power stations with their capacities and number of units in the state
	3rd	Types of hydro-turbines and generator used
	4th	Introduction to gas turbine power station. Merits, demerits and application of gas turbine power plants
12 th	1st	Fuels for gas turbine. Selection of site for gas turbine stations
	2nd	Elements of simple gas turbine power plants, Working
	3rd	<i>Class Test, Assignment-2</i>
	4th	<i>Doubt Clearing Class</i>
13 th	1st	<i>Doubt Clearing Class</i>
	2nd	<i>Quiz Test-2</i>
	3rd	Revision – Chapter-1
	4th	Revision – Chapter-2
14 th	1st	Revision – Chapter-3
	2nd	Revision – Chapter-4
	3rd	Revision – Chapter-5
	4th	Revision – Chapter-6