

BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF MECHANICAL ENGINEERING



LESSON PLAN

SUBJECT: POWER STATION ENGINEERING
FACULTY: MRS. SUNITA NAYAK

Sunita Nayak

ACADEMIC SESSION: 2022-23

SEMESTER: 6th

SEC: B

Sunita
13/02/23
H O D (Mech Engg.)

Discipline: Mechanical Engg.	Semester: 6 th	Name of the teaching faculty: Sunita Nayak
Subject: POWERSTATION ENGINEERING-I	No of days/per week class allotted: 4 (Monday, Wednesday, Friday, Saturday)	Semester from date: 14/02/2023 to date: 22/12/2023 No. of weeks-15
Week	Class day	Theory/practical topics
1 st (2P)	15/02/2023	Discussion of Syllabus and Introduction of power station engineering
	17/02/2023	1.0 INTRODUCTION: 1.1 Describe sources of energy
2 nd (4P)	20/02/2023	1.2 Explain concept of Central and Captive power station. 1.3 Classify power plants.
	22/02/2023	1.4 Importance of electrical power in day today life. 1.5 Overview of method of electrical power generation.
	24/02/2023	2.0 THERMAL POWER STATIONS: 2.1 Layout of steam power stations
	25/02/2023	2.2 Steam power cycle. Explain Carnot vapour power cycle with P-V, T-s diagram and determine thermal efficiency.
3 rd (4P)	27/02/2023	2.3 Explain Rankine cycle with P-V, T-S & H-s diagram and determine thermal efficiency, Work done, work ratio, and specific steam Consumption.
	01/03/2023	2.4 Solve Simple Problems.
	03/03/2023	2.4 Solve Simple Problems. 2.5. List of thermal power stations in the state with their capacities.
	04/03/2023	2.6 Boiler Accessories: Operation of Air pre heater, Operation of Economiser, Operation Electrostatic precipitator
4 th (3P)	06/03/2023	2.6 Operation of super heater.
	10/03/2023	2.6 Need of boiler mountings and operation of boiler
	11/03/2023	2.7 Draught systems (Natural draught, Forced draught & balanced draught) with their advantages & disadvantages.

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5 th (4P)	13/03/2023	2.8 Steam prime movers: Advantages & disadvantages of steam turbine, Elements of steam turbine
	15/03/2023	Content beyond syllabus- Compounding of steam turbine (velocity compounding, pressure compounding, pressure-velocity compounding)
	17/03/2023	2.8 Governing of steam turbine
	18/03/2023	2.8 Performance of steam turbine: Explain Thermal efficiency, Stage efficiency and Gross efficiency.
6 th (4P)	20/03/2023	2.9 Steam condenser: Function of condenser, Classification of condenser.
	22/03/2023	2.9 Function of condenser auxiliaries such as hot well, condenser extraction pump, air extraction pump, and circulating pump.
	24/03/2023	2.10 Cooling Tower: Function and types of cooling tower, and spray ponds
	25/03/2023	2.11 Selection of site for thermal power stations.
7 th (3P)	27/03/2023	Class test-1
	29/03/2023	3.0 NUCLEAR POWER STATIONS: 3.1 Classify nuclear fuel (Fissile & fertile material).
	31/03/2023	3.2 Explain fusion and fission reaction.
8 th (4P)	3/04/2023	3.3 Explain working of nuclear power plants with block diagram
	05/04/2023	3.4 Explain the working and construction of nuclear reactor . 3.5 Compare the nuclear and thermal plants.
	08/04/2023	Content beyond syllabus- Types of nuclear reactor (working principle of PWR,BWR)
9 th (3P)	10/04/2023	3.5 Compare the nuclear and thermal plants.
	12/04/2023	3.6 Explain the disposal of nuclear waste.
	15/04/2023	3.7 Selection of site for nuclear power stations. 3.8 List of nuclear power station.
10 th (4P)	17/04/2023	4.0 DIESEL ELECTRIC POWER STATIONS: 4.1 State the advantages and disadvantages of diesel electric power stations
	19/04/2023	4.2 Explain briefly different systems of diesel electric power stations: Fuel storage and fuel supply system

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	21/04/2023	4.2 Fuel injection system, Air supply system, Exhaust system,
	22/04/2023	4.2 Cooling system, Lubrication system, starting system, governing system.
11 th (4P)	24/04/2023	4.3 Selection of site for diesel electric power stations
	26/04/2023	4.4 Performance and thermal efficiency of diesel electric power stations.
	28/04/2023	Internal assessment
	29/04/2023	Internal assessment
12 th (3P)	1/05/2023	5.0 HYDEL POWER STATIONS: 5.1 State advantages and disadvantages of hydroelectric power plant.
	03/05/2023	5.2 Classify and explain the general arrangement of storage type hydroelectric project and explain its operation.
	6/05/2023	5.3 Selection of site of hydel power plant. 5.4 List of hydro power stations with their capacities and number of units in the state.
13 th (4P)	08/05/2023	5.5 Types of turbines and generation used.
	10/05/2023	5.6 Simple problems
	12/12/2023	6.0 GAS TURBINE POWER STATIONS 6.1 Selection of site for gas turbine stations. 6.2 Fuels for gas turbine
	13/12/2023	6.3 Elements of simple gas turbine power plants
14 th (4P)	15/05/2023	6.4 Merits, demerits and application of gas turbine power plants.
	17/05/2023	revision
	20/05/2023	Class test-2
15 th (1P)	22/05/2023	revision