



SYNERGY SCHOOL OF ENGINEERING, DHENKANAL

Department: Electrical Engineering	Semester:- 3 RD Sem	Name of the teaching faculty:- MANMOHAN PANDA
Subject:- Introduction to Electric Generation System	No. of Days/week class Allotted :-3	No. of Weeks:-15 SESSION- 2026-2027 WINTER STARTING DATE - 01-07-2026 ENDING DATE 05-11-2026
No. of week	No. of class	Topic to be Taught
1 st	1 st	Introduction to the Topic
	2 nd	Thermal Power Plants: Coal, Gas/Diesel and Nuclear-based Layout and working of a typical thermal power plant with steam turbines and electric generators
	3 rd	Properties of conventional fuels used in the energy conversion equipment used in thermal power plants: Coal
2 nd	1 st	Properties of conventional fuels used in the energy conversion equipment used in thermal power plants: Gas
	2 nd	Properties of conventional fuels used in the energy conversion equipment used in thermal power plants: Diesel
	3 rd	Nuclear fuels-fusion and fission action
3 rd	1 st	Safe Practices and working of various thermal power plants
	2 nd	Working of Coal Based Power Plants
	3 rd	Working of Gas Based Power Plant
4 th	1 st	Working of Diesel based power plants
	2 nd	Working of Nuclear Based power plants
	3 rd	Functions of the following types of thermal power plants and their major auxiliaries Coal fired boilers: fire tube and water tube Gas/diesel based combustion engines
5 th	1 st	Types of nuclear reactors
	2 nd	Disposal of nuclear waste
	3 rd	Nuclear shielding
6 th	1 st	Large Hydropower Plants Energy conversion process of hydro power plant
	2 nd	Classification of hydro power plant: High, medium and low head
	3 rd	Construction and working of hydro turbines used in different types of hydro power plant
7 th	1 st	High head-Pelton turbine
	2 nd	Medium head-Francis turbine
	3 rd	Low head-Kaplan turbine

M.M. Panda
02/06/2026





8th	2nd	Safe Practices for hydro power plants
	3rd	Locations of these different types of large hydro power plants in India
	1st	Micro-Hydropower Plants
9th	2nd	Lay out of micro hydro power plants
	3rd	Different types of micro-hydro turbines for different heads
	1st	Pelton turbines
10th	2nd	Francis turbines
	3rd	Kaplan turbines
11th	1st	Locations of these different types of micro-hydro power plants in India
	2nd	Economics of Power Generation and Interconnected Power System
	3rd	Connected load, firm power, cold reserve, hot reserve, spinning reserve
12th	1st	Base load and peak load plants
	2nd	Load curve, load duration curve, Integrated duration curve
	3rd	Cost of generation: Average demand, Maximum demand, demand factor, Plant capacity factor
13th	1st	Plant use factor, diversity factor, load factor and plant load factor
	2nd	Choice of size and number of generator units
	3rd	Causes of Combined operation of power station
14th	1st	Causes, Impact and reasons of Grid system fault:
	2nd	State grid, national grid, brownout and blackout;
	3rd	Sample blackouts at national and international level
15th	1st	Previous year questions Discussion
	2nd	Previous year questions Discussion
	3rd	Previous year questions Discussion

Manmohan Panda
02.06.2026

PREPARED BY
MANMOHAN PANDA
LECTURER EE

M.M. Panda
11/06/2026

HOD EE
HOD

ELECTRICAL ENGG DEPT.
SSE, Dhenkanal

Dengne
11/06/26
PRINCIPAL

Synergy School of Engineering
Dhenkanal