

Branch Name:	Electrical Engineering
Program Code	ET403
Course Name:	POWER STATION ENGINEERING
Course Code:	2ET4030605
Pre-requisite Course:	

COURSE OBJECTIVE:

The course content should be taught and implemented with an aim to develop different skills

1. Understand the testing methods of control and power cables.
2. Understand the importance of interconnected system.
3. Solve the numerical problems on power plant economy.
4. List the methods of pollution control in power station.
5. Observe safety measures applied in power station.

TEACHING AND EVALUATION SCHEME:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture	Tutorial	Practical	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	-	2	4	60	40	20	30	150

DETAILS OF COURSE CONTENTS:

Sr No	Topics and Sub-topics	Total Hours	% Weightage
1	POWER STATION EQUIPMENT AND THEIR LAYOUT 1.1 Electrical and mechanical equipment and their auxiliaries of (i) Thermal (ii) Hydro and (iii) Nuclear Power Station (Specification, performance and applications) 1.2 Layout of above Power stations and control room. 1.3 Unit transformer and station transformer.	10	25
2	POWER AND CONTROL CABLE 2.1 Ratings and Testing of power cable. 2.2 Advance methods of fault location. 2.3 Types of cable joints, connections and terminations. 2.4 Comparison of power and control cable.	04	10
3	INTERCONNECTED SYSTEMS 3.1 Inter connections of power stations. 3.2 Inter connections of substations. 3.3 Load sharing. 3.4 Power limit of inter connector. 3.5 Functions of load dispatch center (LDC)	06	15

4	POWER PLANT OPERATION ECONOMY 4.1 Components for total cost of generation per unit. 4.2 Methods for depreciation calculation. 4.3 Interpretation of load curves. 4.4 Effect of load curves on cost per KWH.	08	15
5	POLLUTION AND ITS CONTROL IN POWER STATIONS 5.1 Types of pollution in different Power stations. 5.2 Control of pollution. 5.3 Effect of pollution on environment. 5.4 Standardization for environment protection. 5.5 Methods for reducing pollution.	06	15
6	POWER STATION MANAGEMENT & SAFETY MEASURES 6.1 Organization structure of modern power station 6.2 Responsibilities and duties of personal. 6.3 Delegation of power. 6.4 Record keeping in power station 6.5 GEC Code for materials 6.6 Possible hazards in power station 6.7 Indian Electricity (I.E) rules for general safety. 6.8 Preventive measures for safety. 6.9 Safety devices applied to different equipment. 6.10 Safety tools and equipment used in power station	08	20

LIST OF REFERENCES:

1. A course in Power Plant Engg. Arora S. Domkundwar Dhanpatrai & sons
2. A course in Electrical Power J. B. Gupta S. K. Kataria & sons
3. Power Plant Technology C. L. Wakil Mc. G.Hill
4. Plant Engineers Hand Book, Vol I & II Homy P. Seervai Multitech Publishing
5. Electrical Power Nagrath & Kothari Tata Mc. Hill

LIST OF PRACTICAL:

SR NO	PRACTICALS/EXPERIMENTS
1	Study of thermal power station equipments and its layout.
2	Study of Hydro power station equipments and its layout.
3	Study of Nuclear power station equipments and its layout.
4	Synchronize an alternator with infinite bus bar.

5	Role of load dispatch center (LDC)
6	Study of different types of load curves.
7	Determination of depreciation cost in power station.
8	Effect of pollution and methods for reducing it.
9	Study of safety devices applied to equipment in TPS/NPS/HPS.
10	Organization structure of modern power station

COURSE OUTCOME:

The course content should be taught and implemented with an aim to develop different skills leading to the achievement of the following competencies and course learning outcomes:

1. Understand the layout of different power station.
2. List the specifications of PowerStation auxiliaries.
3. Understand the testing methods of control and power cables.
4. Understand the importance of interconnected system.
5. Solve the numerical problems on power plant economy.
6. Discuss the methods of pollution control and Explain safety measures applied in power station.

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Differentiate power generation methods: thermal, hydro, nuclear, and renewable sources.	2 Understanding
CLO2	List the specifications of PowerStation auxiliaries.	1 Remembering
CLO3	Understand the testing methods of control and power cables.	2 Understanding,
CLO4	Understand the importance of interconnected system.	3 Applying, 2 Understanding
CLO5	Solve the numerical problems on power plant economy.	5,3, 4 Evaluate, Applying, Analyze
CLO6	Discuss the methods of pollution control and Explain safety measures applied in power station.	3 Applying, 2 Understanding

Mapping of CLOs with Pos & PSOs

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CLO1	H				M			L		L			H	L	L
CLO2	L				M							L	H	M	L
CLO3	L						M						L		M
CLO4			L		L			L			M		M	L	M
CLO5					L		L					L	M		
CLO6	L		L				L					L	L	L	H

H: High, M: Medium, L: Low