Course Name Power Plant Engineering

Course Code EE801C

Course Credit 3

Contact Hour 3L

Prerequisite

Course Objective

The objectives of this course are

1. Ability to understand sources of energy and types of power plants.
2. Ability to analyze different types of steam cycles and estimate efficiencies in a steam power plant
3. Ability to understand the performance characteristics and components of different power plants.
4. Ability to estimate efficiencies associated with such systems.

Course Outcome

On completion of the course students will be able to

1. Familiar with power plant systems, terms and definitions and basic power plant engineering design calculations.
2. Know the proper design and application of power plant related equipment.
3. Identify methods of diagnosing and correcting equipment mis-operation or misapplication.
4. Familiar with recognized standards of utilized in the design and operation of power plant equipment.
5. Prepare and present topical issues relevant to power plant design and operations.

CO Mapping with departmental POs

H: High, M: Medium, L: Low

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	H	M										
CO 2	M	H	L									
CO 3			M		L							
CO 4		L	M	M								
CO 5	M		M	L								

Course Content

Module I:

Concepts of Power plants of different types: Setups, energy conversions and measurement requirements, examples of Thermal, Hydal, and Nuclear plants. Thermal power plant and system instrumentation. Instrumentation for Turbines, Condensers, Generators, Coal handling, Water treatment, Feed water, combustion air and flue gases

Module II:

Control:

Boiler Control - Steam pressure control, combustion control, Furnace Draft control, Steam temperature control, Feed water control, Data logger and computer control, supervisory control and monitoring system.

Instrumentation for safety interlocks - protective gears, emergency measures, Alarm systems and Analysis etc. Pollution measurement, monitoring and control.

Module III:

Data handling-processing, logging, acquisition, accounting, display and storage. Instrumentation for Generator and Busbar coupling. Introduction to power plant modeling/simulation

Text Books:

1. Power plant engineering, P.K.Nag, Tata McGraw-Hill Education
2. Power Plant Engineering, G.R.Nagpal & S.C. Sharma, Khanna publication.
3. Principles of Industrial Instrumentation, D. Patranabis, TMH New Delhi

Reference Books:

1. Electric Power Engineering Handbook – Edited by L. L. Grigsby.
2. Instrument Engineers Handbook, B. G. Liptak, Chilton Book Co., Philadelphia