

Basics of Power Plant Operations - CT

62 Total Lessons

Module 1 – Power Plant Basics (4)

Energy Conversion

501-02	Steam Turbine Basics
501-03	Combustion System Component Overview
501-04	Boiler Water and Steam Cycle Overview
501-05	Generator Overview

Module 2 – Basic Electricity (6)

401-01	Electron Theory
401-02	Magnetism and Electromagnetism Explained
402-01	Introduction to Alternating Current (AC)
409-01	AC Induction Motors
409-02	AC Generators
415-01	Transformer Basic Operation and Theory

Module 3 – Plant Instrumentation and Control Theory (6)

603-01	Instrumentation and Control Overview
603-06	Temperature Instruments
603-07	Pressure Measuring Devices
603-08	Level Measuring Devices
603-09	Flow Measuring Devices
613-01	Introduction to Automated Control

Module 4 – Introduction to Plant Equipment (5)

219-01	Introduction to Centrifugal Pumps
215-01	Introduction to Valves and Their Components
223-01	Heat Exchanger Theory
231-01	Introduction to Positive Displacement Pumps
243-01	Introduction to Hydraulics

Module 5 – Plant Drawings (2)

611-01	P&ID Basics
611-02	Reading a P&ID

Module 6 – Plant Systems (4)

521-01	Introduction to Combustion Air and Flue Gas Systems
551-01	Introduction to the Circulating Water System
553-01	Introduction to the Condensate System
553-02	Introduction to the Feedwater System

Module 7 – Turbines (3)

505-01	Steam Turbine Design
505-02	Steam Turbine Valves and Controls
505-03	Steam Turbine Auxiliaries

Module 8 – Combustion Turbine Fundamentals (12)

511-01	Gas Turbine Fundamentals and Configuration of Generating Facilities
511-02	Introduction to the GE LM Series Gas Turbine
511-03	Introduction to GE Frame Series Gas Turbines
511-04	Introduction to the Siemens V-Series Gas Turbine
511-05	Heavy Duty Gas Turbines – Major Components and Support Systems
511-07	Aero-derivative Gas Turbines – Major Components and Systems
511-10	Fundamentals of Gas Turbine Operation and Routine Maintenance
511-11	Overview of Gas Turbine Control Schemes
511-12	Gas Turbine Fuel and Combustion Systems
511-13	Gas Turbine Lube Oil and Control Oil Systems
511-14	Gas Turbine Air Systems
511-15	Gas Turbine Water Wash and Drain System





Module 9 – Power Generation (2)

507-01	Generator and Auxiliary Systems' Functions
507-02	Generator and Auxiliary Systems' Flow Paths and Major Components

Module 10 – Environmental Protection (2)

535-01	Flue Gas Desulfurization System
563-15	Environmentally Sensitive Operations

Module 11 – Electrical Systems and Equipment (5)

418-03	Protection Relays
418-04	Generator, Transformer, and Motor Protection
418-05	Grounding and Bonding
560-01	Main Transformers
560-03	Fuses and Circuit Breakers

Module 12 – Plant Controls (4)

565-01	Distributed Control System Fundamentals
565-02	Distributed Control System Components
565-03	Using Distributed Control System Diagrams
565-04	Power Plant Unit Control

Module 13 – Basic Water Chemistry and Treatment (7)

559-05	Corrosion Control in a Power Plant
559-06	Steam Chemistry Control and Guidelines
559-07	Power Plant Water Treatment Systems
559-08	Introduction to Desalination
559-09	Desalination: Pre- and Post-treatment of Water
559-10	Reverse Osmosis
559-11	Thermal Desalination Technologies



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