

Simple Cycle Fundamentals Course Bundle

11 Modules/79 Total Lessons

Module 1 – Power Plant Basics (7)

Energy Conversion

- 501-03 Combustion System Component Overview
- 501-05 Generator Overview

Industrial Mathematics and Science

- 170-01 Introduction to Industrial Math
- 170-02 Industrial Math – Measurements and Calculations
- 170-03 Industrial Math – Fractions, Percentages, and Ratios
- 171-10 Introduction to Physics – Force and Motion
- 171-11 Introduction to Physics – Energy, Work, and Power

Module 2 – Basic Electricity (8)

- 401-01 Electron Theory
- 401-02 Magnetism and Electromagnetism Explained
- 402-01 Introduction to Alternating Current (AC)
- 402-02 Ohm's and Kirchhoff's Laws involving AC Circuits
- 402-07 Fundamentals of 3-Phase 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 – 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 Support 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

Continued >

Module 7 – Power Generation (8)

- 507-01 Generator and Auxiliary Systems' Functions
- 507-02 Generator and Auxiliary Systems' Flow Paths and Major Components
- 507-03 Generator Construction and Process Control
- 507-04 Generator and Auxiliary Systems' Start-up
- 507-05 Generator and Auxiliary Systems' Normal Operations
- 507-06 Generator and Auxiliary Systems' Shutdown
- 345-01 NERC Overview and Application for Generator Operators
- 350-10 Generator Protection

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Module 8 – Environmental Protection (4)

535-05	Selective Catalytic Reduction (SCR)
535-09	Introduction to Continuous Emission Monitoring Systems
535-10	Fundamentals of Using a CEMS
563-15	Environmentally Sensitive Operations

Module 9 – Electrical Systems and Equipment (16)

411-04	Motor Control Centers
417-01	Switchgear
417-02	Low Voltage Breakers
417-03	Medium and High Voltage Switchgear
417-04	General Switchgear Maintenance
417-05	Switchgear Specific Maintenance Procedures
417-06	Circuit Breaker Time Travel
418-03	Protection Relays
418-04	Generator, Transformer, and Motor Protection
418-05	Grounding and Bonding
427-01	Electrical Freeze Protection Components and Application
560-01	Main Transformers
560-02	Station Service System
560-03	Fuses and Circuit Breakers
560-04	Protective Relays and Instrument Transformers
560-05	Equipment Disconnects and Grounding

Module 10 – Plant Controls (4)

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

Module 11 – Basic Water Chemistry and Treatment (7)

559-01	Molecular Chemistry of Water
559-02	Elements and the Periodic Table of Elements
559-03	Chemical Compounds
559-04	Corrosion Causes and Effects
559-05	Corrosion Control in a Power Plant
559-07	Power Plant Water Treatment Systems
559-10	Reverse Osmosis



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800.447.3177

industrial-skills@hsi.com