

# Process and Refining Operations Course Bundle

206 Total Lessons

Online Training

## 700 Process Systems and Operations (27)

701-01 Introduction to Petroleum Refining

701-02 Basic Petroleum Chemistry

701-03 OSHA's Process Safety Management Standard

701-04 History of Refining

705-01 Refinery Overview and Configuration

705-03 Crude Unit

705-05 Catalytic Reformer

705-07 Fluid Catalytic Cracking

705-09 Coker Operations

705-11 Gasoline Blending

705-13 Sweetening

705-15 Sulfuric Acid Plant

707-01 Features and Operation of Process Heaters

709-01 Features and Uses of Process Tanks

711-01 Introduction to Distillation

711-02 Operation of a Distillation Column

713-01 Introduction to Process Separators

715-01 Introduction to Process Reactors

717-01 Introduction to Methane Reforming and Synthesis

719-01 Safety Alarm Systems and Instrumentation

719-02 Overpressure Safety systems

721-01 Process Utilities System, Part 1

721-02 Process Utilities System, Part 2

723-01 Process Product Movement and Shipment

723-02 Tanks and Vessels Used for Storage

725-01 Sampling Principles and Methods

725-02 Testing Principles and Procedures

## 200 Mechanical Maintenance (55)

201-01 Working Principles of Simple Machines

203-01 Introduction to Bearings

205-01 Introduction to Gear Drives

207-01 Lubrication Selection and Sampling in Rotating Machinery

207-02 Lubrication Failures and Management in Rotating Machinery

207-03 Lubrication Analysis in Rotating Machinery

208-01 Pipe Connections and Symbols

208-03 Piping Construction and Sizing

208-04 Piping Expansion, Support, and Insulation

208-05 Piping Auxiliaries

209-01 Couplings

209-03 Pre-Alignment Procedures

209-04 Rough Alignment

209-05 Mathematical Rim-and-Face Alignment

209-06 Graphical Rim-and-Face Alignment

209-07 Reverse Dial Alignment

209-09 Laser Alignment

213-01 Lubrication Basics

213-04 Lubrication Filtration and Purification

215-01 Introduction to Valves and Their Components

215-02 Valve Actuators

215-03 Gate Valves

215-04 Globe Valves

215-05 Butterfly Valves

215-06 Ball Valves

215-07 Check Valves

215-08 Needle Valves

215-09 Plug Valves

215-10 Diaphragm Valves

215-11 Pinch Valves

215-12 Safety and Relief Valves

215-13 Solenoid Valves

215-14 Valve Positioners

215-15 Pressure Regulating Valves

219-01 Introduction to Centrifugal Pumps

219-02 Centrifugal Pump Design

219-03 Centrifugal Pump Fundamentals

219-04 Centrifugal Pump Operation

223-01 Heat Exchanger Theory

223-02 Open Heat Exchanger Design and Operation

223-03 Closed Heat Exchangers

225-01 Compressed Air Systems

225-02 Compressed Air System Components

225-03 Positive Displacement Compressors

225-04 Dynamic Compressors

229-01 Bolted Joints

229-02 O-Rings

229-03 Making Gaskets

229-04 Fasteners

229-05 Packing Material Use and Installation

229-06 Mechanical Seals Use and Installation

231-01 Introduction to Positive Displacement Pumps

231-02 Reciprocating Positive Displacement Pumps

231-03 Rotary Positive Displacement Pumps

271-01 Vibration Introduction



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## 400 Electrical Maintenance (26)

- 401-01 Electron Theory
- 401-02 Magnetism and Electromagnetism Explained
- 401-03 Ohm's and Kirchoff's Laws Relating to DC Circuits
- 401-04 Evaluating Series and Parallel DC Circuit Performance
- 401-05 Determine Circuit Outputs from Specified Inputs
- 402-01 Introduction to Alternating Current
- 402-02 Ohm's and Kirchoff's Laws Involving AC Circuits

- 402-03 Inductance in AC Circuits
- 402-04 Capacitance in AC Circuits
- 402-05 Impedance in AC Circuits
- 402-06 AC Power
- 402-07 Fundamentals of 3-Phase AC
- 409-01 AC Induction Motors
- 409-02 AC Generators
- 411-01 Introduction to Motor Controls
- 415-01 Transformer Basic Operation and Theory
- 416-01 Battery Basics

- 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
- 418-01 Electrical Faults and Current Ratings
- 418-05 Grounding and Bonding
- 427-01 Electrical Freeze Protection Components and Application

## 500 Power Generating Systems and Operations (46)

- 501-01 Energy Conversions
- 501-02 Steam Turbine Basics
- 501-03 Combustion System Component Overview
- 501-04 Boiler Water and Steam Cycle Overview
- 501-05 Generator Overview
- 505-01 Steam Turbine Design
- 511-01 Combustion Turbine Fundamentals
- 531-01 Combustion Theory
- 531-02 Basic Boiler Design
- 531-03 Boiler Valves and Fittings
- 531-04 Boiler Fuel and Air Systems
- 531-05 Boiler Water and Steam Cycle
- 531-06 Boiler Heat Recovery Systems
- 531-07 Boiler Environmental Controls
- 531-08 Boiler Operator Roles and Responsibilities
- 533-01 Fuel Combustion and Controls

- 533-02 Boiler Burner Controls and Management
- 535-01 Flue Gas Desulfurization System
- 535-02 Flue Gas Desulfurization System, Open Spray Design, Part 1
- 535-03 Flue Gas Desulfurization System, Open Spray Design, Part 2
- 535-04 Dry Scrubber Operation
- 535-05 Selective Catalytic Reduction (SCR) System
- 551-01 Introduction to the Circulating Water System
- 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 Steam Production
- 559-06 Steam Chemistry Control Guidelines
- 559-07 Industrial Water Treatment Systems
- 563-02 Water and Steam Terms and Principles

- 563-03 Heat Transfer Principles
- 563-04 Laws and Principles of Thermodynamics
- 563-05 Performance Parameters
- 563-06 Balancing Efficiency, Availability, Capability and Flexibility
- 563-07 Instrumentation and Controls
- 563-08 Boiler Efficiency
- 568-09 Boiler Reliability
- 563-14 Pump Efficiency And Reliability
- 563-15 Environmentally Sensitive Operations
- 565-01 Distributed Control System Fundamentals
- 565-02 Distributed Control System Components
- 565-03 Using Distributed Control System Diagrams
- 567-01 Understanding the Basic Properties of Water and Steam
- 567-02 Saturated Steam Tables
- 567-03 Superheated Steam Tables

## 600 Instrumentation and Control (20)

- 603-01 Instrumentation and Control Overview
- 603-02 Principles of Temperature
- 603-03 Principles of Pressure
- 603-04 Principles of Level
- 603-05 Principles of Flow
- 603-06 Temperature Instruments
- 603-07 Pressure Measuring Devices

- 603-08 Level Measuring Devices
- 603-09 Flow Measuring Devices
- 603-15 Weight Measuring Devices
- 607-01 Analytical Instruments
- 607-02 Introduction to Analytical Testing
- 611-01 P&ID Basics
- 611-02 Reading a P&ID

- 611-03 Electrical Drawings
- 611-04 Logic Diagrams
- 611-05 Industrial Print Reading Overview
- 613-01 Introduction to Automated Control
- 613-02 Pneumatic & Electronic Control Systems
- 621-01 Introduction to Programmable Logic Controllers (PLC)

## 100 Safety, Health, and Plant Science (32)

- 101-01 Personal Protective Equipment
- 101-02 Hearing and Noise Safety
- 101-03 Respiratory Protection Program
- 101-71 Introduction to Industrial Hygiene
- 102-01 Slip, Trip, and Fall Prevention
- 102-04 Machine Hazards and Safety
- 103-01 First Aid
- 103-02 BloodBorne Pathogens
- 104-01 Fire Prevention and Protection Program
- 104-02 Fire Extinguisher Safety
- 105-01 Lockout/Tagout Safety Program
- 107-01 Electrical Safety

- 107-02 Energized Electrical Equipment Safety
- 107-03 Arc Flash Hazard Basics
- 108-01 Materials Handling and Storing Safety
- 110-01 Scaffolding Safety
- 117-01 Hazardous Materials Safety
- 117-02 Acid and Caustic Awareness
- 117-03 Asbestos and Silica Awareness
- 117-04 Ammonia Awareness
- 117-05 Hydrogen Sulfide Awareness
- 117-06 Chlorine Awareness
- 117-07 Radiation Awareness
- 117-08 Hazardous Gases – Methane, Carbon Monoxide, and Carbon Dioxide

- 117-09 Lead Awareness
- 117-20 Gas Monitoring Basics
- 119-03 Hazardous Communications Employee Training Program, Part 1
- 119-04 Hazardous Communication Employee Training Program, Part 2
- 119-06 Hazard Communication Programs in the Workplace
- 119-07 Exposure to and Detection of Hazardous Chemicals
- 119-08 Physical, Health, and Environmental Hazard Classes
- 119-09 Labeling and SDS for Hazardous Chemicals