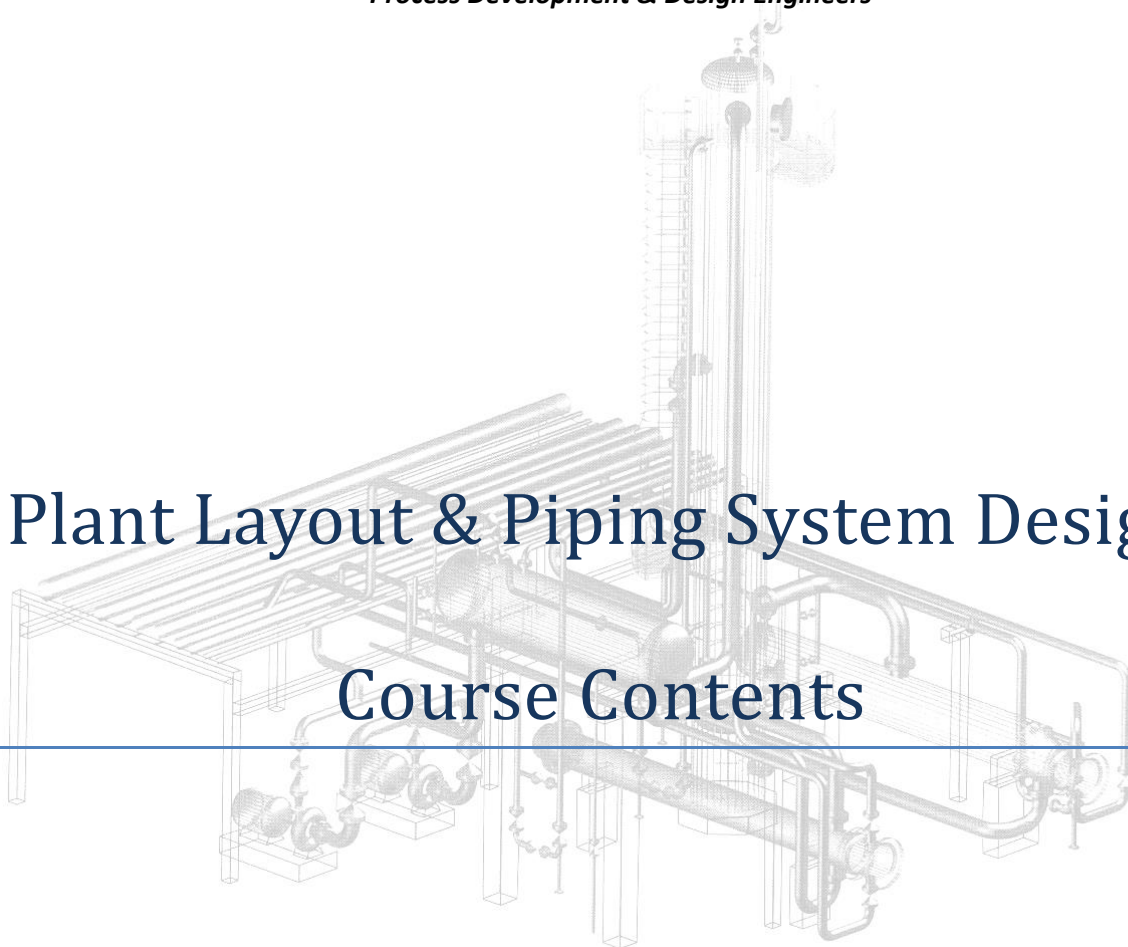




*Process Development & Design Engineers*

# Plant Layout & Piping System Design

## Course Contents



# PLANT LAYOUT & PIPING SYSTEM DESIGN

## Program Description

This program is designed for piping drafters & layout designer, piping engineers, piping stress engineers and those who work in related job description, with basic to intermediate level knowledge in piping engineering and its operation.

The course will expose you to the philosophy and approach to the design of plant equipment and piping general arrangement and the specific design consideration for frequently encountered process equipment and piping systems.

## COURSE OUTLINE

### The Basics of Plant Layout Design

- The plant Layout Designer
- Project Input Data
- Basic Layout Philosophy
- Definitions, Standards, and Terminology

### Plant Layout Specification

- The Components of Specification

### Plot Plans

- The Plot Plan in the Process Unit
- Definition
- Plot Plan Development
- Types of Plot Plans
- Equipment Location
- Pipe Racks
- Roads, Access Ways, and Paving & Buildings
- Equipment Spacing
- Sample Plot Plan Arrangement.

### Pumps

- Pump Terminology 181
- NPSH Requirements
- Types of Pumps
- Pump Locations
- Pump Piping

- Pump Piping Supports

### Compressors

- Auxiliary Equipment
- Centrifugal Compressors: Nozzle Orientations.
- Types of Compressor Drives.
- Lube Oil System
- Seal Oil System
- Surface Condensers and Auxiliary Equipment
- Compressor Maintenance
- Compressor Arrangement and Location
- Elevations of Machines
- Inter- and After-Coolers.
- Housing and Platform Requirements
- General Compressor Layout

### Heat Exchangers

- Exchanger Construction
- Exchanger Location and Support
- Nozzle Orientation
- Exchanger Piping
- Exchanger Maintenance

### Drums

- Types of Drums
- Location of Drums
- Nozzle Locations
- Platform Arrangements
- Piping Arrangements
- Drum Instrumentation
- Maintenance
- Further Considerations

### Towers

- The Distillation Process
- Types of Towers
- Design Considerations for Towers
- Tower Elevation and Support
- Nozzle Elevation and Orientation
- Platform Arrangements
- Tower Piping.
- Tower Instruments

- Maintenance

### Furnaces

- Basic Operation and Primary Pans of a Furnace
- Types of Furnaces
- Burners
- Combustion
- Air Preheating Systems
- General Arrangement of Furnaces
- Piping Layout for a Furnace
- Tail Gas Incinerator and Waste Heat Unit

### Reactors

- Process Operation
- Design Considerations for Reactors
- Location of Reactors
- Support and Elevation
- Nozzle Locations and Elevations
- Platform Arrangements
- Piping layout and Arrangements
- Maintenance

### Underground Piping

- Industry Standards
- Types of Systems.
- Construction Materials
- Oily Water and Storm Water Systems
- Chemical and Process (Closed) Sewers
- Process and Potable Water
- Fire Water System
- Underground Electrical and Instrument Ducts
- Double Containment-Underground Systems.
- Fabrication
- Underground Composite

### Pipe Racks

- Establishing Width, Bent Spacing, and Elevations
- Setting Line, Valve, and Instrument locations
- Pipe Flexibility and Supports
- Structural Considerations

- Other Considerations

### Instrumentation

- Types of Instruments
- Instrument Locations
- Miscellaneous

### Process Liquid Storage Tanks

- Codes and Regulations.
- Types of Tanks
- Spill Containment.
- Dike Access
- Sizing Tanks and Dikes
- Tank Details
- Tank Supports

### Who Should Attend

- Piping drafters, designers and engineers
- Technicians, Fitters and Welders.

### Materials- (Your Take Home)

Training Manuals, Piping Engineering & Design eBooks, Design Charts & Tables and we Guarantee Knowledge transfer.

### What You Should Bring

Participants should bring a Laptop computer (if you have one), a scientific calculator, sketchpad, pen and a notebook.

**Duration:** Required minimum duration – 5 days Full-time.

### Training Features

- Instructor lead hands-on training
- Assessment quiz and certificate at completion.
- Conducive training environment
- Excellent Material Provided
- Industry Leading Software used in Training
- Individual Attention & Placement Guidance