Process Engineering Essential

Energy Milestones Corporation

Advancing Professionals to the next level

Energy Milestones is proud to be accredited, partner and associated with the following association bodies:

info@energymilestones.com

energymilestones.com

Process Engineering Essential

Overview

The Process Engineering Essentials training course is well-matched to those professionals and practitioners who require familiarity not only with chemical engineering principles, but also with many of the other engineering disciplines, including mechanical, electrical and instrumentation. This is essential since Process Engineering is at the heart of much of the chemical, oil, gas, and petrochemical industries. Process Engineers are interested in the transportation and transformation of solids, liquids, and gases. In the oil and gas sector, processes of specific importance include separation, such as distillation, heat transfer, hydraulics, and fluid flow, as well as reaction engineering, process control, and economics. This training course focuses on the central areas of process engineering and guides the delegates in developing both fundamental and practical understandings of key issues.

Course Objectives

- Understand fundamental principles used in processes and facilities
- Apply practical understanding of hydraulics and fluid flow
- Apply learning from historical safety incidents
- Perform relevant calculations & analyses to assist in operation, sizing, & troubleshooting.
- Develop perspective & focus from a company viewpoint of the interaction of different engineering disciplines

Process Engineering Essential

Course Content

1. Introduction and Fundamentals of Process Engineering
   - Mass and energy balances
   - Reactor types
   - Process & Engineering Diagrams
   - Flammability
   - Electrical area classification
   - Risk Management and Hazard Studies

2. Hydraulics and Fluid Flow
   - Pressure and head & Bernoulli's theorem
   - Flow of liquids, Reynolds number and pressure drop in pipes
   - Two-phase and multi-phase flow
   - Enthalpy and thermodynamics
   - Principles of process relief devices and process design of relief systems
   - Mechanical Equipment – Pumps, Compressors & Mixers

3. Heat Transfer and Reaction Engineering
   - Heat Transfer Mechanisms
   - Heat transfer coefficients and calculation
   - Heat exchangers, type and sizing
   - Catalysis and Reaction Engineering
   - Chemical reactions & kinetics
   - Green Chemistry & Engineering and Sustainability

Process Engineering Essential

Course Content

4. Distillation Processes and Equipment
   - Phase behaviour and vapour/liquid equilibria
   - Gas/Liquid separation
   - Distillation equipment - Columns and vessels
   - Troubleshooting of process equipment
   - Overview of Other Separation Processes
   - Effluent treatment in the refinery and petrochemical industries

5. Process Control and Economics
   - Classification of control systems
   - Measured variables
   - Simple feedback control
   - Preliminary economic analysis
   - Fixed and variable costs, break-even analysis
   - Estimating the cost of process equipment and plants

Process Engineering Essential

Targeted Audience

- Plant/Operations Personnel and Managers
- Petroleum Engineers
- Production Engineers
- Trainee Process Engineers
- R&D Chemists, Plant Chemists
- Business Managers

Course Methodology

Facilitated by an experienced professional trainer, this training course will be conducted as a highly interactive workshop session. A variety of training methodologies and facilitation techniques will be used before and during the course whenever applicable. These methods are aimed at enhancing individual and group interaction while maximizing learning. Some of these methods are:

- Online Pre-post Test
- Colorful Visual Aids
- Gamification
- Self-Assessment Instruments
- Simulations
- Case Studies
- Videos
- Group Exercises & Discussions
- Role plays
- Indoor & Outdoor games