Introduction to Process Engineering

FESTO

Career Exploration

The **Introduction to Process Engineering Certification** provides foundational knowledge in the field of process engineering, covering key topics such as materials science, pressure systems, vacuum systems, chemical processing, and electrical applications. This course is ideal for students entering advanced manufacturing, semiconductor fabrication, and related industries, and it aligns with modern industry needs for high-demand roles.

Industry Recognized Certification Topics

- Process Engineering General, Mechanical, Electrical and Fluid Power Safety
- Introduction to Process Engineering
- Materials and Matter
- States of Matter and Heat Transfer
- Fluid Properties and Flow
- Pumps and Valves
- Pressure and Vacuum Systems
- Chemical Concepts
- Electrical Principles
- Diagrams and Instrumentation

Units - 9 / Labs - 5

Industry Recognized Certification Competencies

- Define process engineering and its industrial applications
- Explore careers in semiconductor and advanced manufacturing
- Identify common engineering materials: metals, polymers, ceramics, composites
- Understand atomic structure and basic material properties
- Describe solids, liquids, and gases in terms of energy and behavior
- Explain the principles of heat transfer and phase changes
- Define viscosity, density, and flow characteristics
- Differentiate between laminar and turbulent flow in process systems
- Recognize common types of pumps and valves
- Understand their role in controlling flow and pressure in systems
- Measure and interpret pressure in various units
- Explain vacuum generation and its importance in process environments
- Identify atoms, molecules, and chemical reactions
- Describe acids, bases, pH levels, and safe chemical handling
- Understand voltage, current, resistance, and simple circuits
- Apply basic electrical safety and measurement practices
- Read and interpret Piping & Instrumentation Diagrams (P&IDs)
- Recognize symbols and components used in industrial schematic