



Mechanical Engineering

ASME B31.3 Process Piping Design Code

Course Introduction

This training course is designed to provide participants with the relative concepts and background on the ASME B31.3 for Pressure process piping for the design, materials examination, testing and nonmetallic piping. This training course will discuss the introduction to the different parts of the ASME B31.3 Standard and will cover all requirements for safe design, construction, inspection, testing, operation and maintenance of liquid pipeline systems. This focuses on the requirements for process piping related to the design, construction, fabrication, inspection, examination in a safe and economical piping system.

Target Audience

This training course is designed and beneficial for professionals such as Snr. Engineer, Engineer.

Learning Objectives

- Understand the scope & definition of ASME B31.3, process piping design, construction &
- mechanical integrity
- Understand metallic pipe and fitting selection including its system failure, bases for selection and method requirements
- Identify the strengths of materials including its requirements and be able to identify the bases for design stresses
- Determine the components of pressure design and be able to know the concepts of weld joint strength factor and design pressure & temperature
- Know the process of valve selection and be able to list the requirements needed for the selection process

- Become familiar with the design of flanged joints and be able to describe its features & functions
- Introduce flexibility & flexibility analysis and able to explain the general considerations for the layout and support of pipes
- Learn the various types and designs of expansion joints and be able to describe their components and use
- Understand the fabrication and installation methods of piping and be able to list the requirements and guidelines needed in the inspection, examination and testing of pipes
- Heighten awareness with the concept of instrument piping and pressure relieving systems and learn how these systems can be designed
- Know the design, fabrication, installation, inspection, examination and testing methods for nonmetallic piping systems, category M Fluid service & high-pressure piping
- Review the concept of API 570 including its inspection, repair, alteration and rerating of in-service
- piping

Course Outline

• 01 DAY ONE

Introduction and history of ASME codes

- Scope and Definitions
- Content, Coverage and Exclusions
- Design include Design Pressure, Design Temperature
- Listed Components Unlisted Components
- Allowances for Pressure and Temperature Variations
- Allowable Stresses and Other Stress Limits
- Bases for Design Stresses
- Casting Quality Factor, E_c and Weld Joint Quality Factor, E_j
- Pressure design of components
- Branch Connections
- Pressure Design of Flanges and Blanks
- Fluid service requirements for piping components and piping joints

• 02 DAY TWO

Flexibility and support

- Chapter iii materials
- Listed Materials, Unlisted Materials. Unknown Materials. Reclaimed
- Materials.
- Lower Temperature Limits
- Impact Testing Methods and Acceptance Criteria
- Fluid Service Requirements for Materials
- Chapter IV Standards for Piping Components
- Chapter V Fabrication, Assembly, and Erection
- Welding and Brazing Qualification, procedures Specifications.
- Preheating
- Heat treatment requirements
- Bending and forming
- Assembly and erection

• 03 DAY THREE

Chapter VI Inspection, Examination, and Testing

- Responsibility and qualifications for Inspection and examination
- Extent of Required Examination
- Radiographic and Ultrasonic Examination
- Testing Required Leak Test
- Hydrostatic Leak Test
- Pneumatic Leak Test
- Hydrostatic-Pneumatic Leak Test

• 04 DAY FOUR

Chapter VII Nonmetallic Piping and Piping Lined with Nonmetals

- Pressure design of piping components
- Fluid service requirements for nonmetallic materials
- Materials general requirements
- Fabrication, assembly, and erection
- Inspection, examination, and testing
- Chapter viii piping for category M Fluid Service

• 05 DAY FIVE

Chapter IX High Pressure Piping

- Chapter X High Purity Piping
- Review codes appendix
- Review of codes tables.

Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
May 12, 2025	May 16, 2025	5 days	4250.00 \$	UAE - Dubai
Aug. 18, 2025	Aug. 22, 2025	5 days	4250.00 \$	UAE - Dubai
Sept. 15, 2025	Sept. 19, 2025	5 days	4250.00 \$	UAE - Abu Dhabi
Dec. 14, 2025	Dec. 18, 2025	5 days	4250.00 \$	KSA - Riyadh