

## Course Content

**Title:** ASME B31.4 Liquid Pipelines and ASME B31.8 Gas Pipelines

**Potential PDH:** 40

**Code:** BTT014

### Description:

A five-day course that covers the requirements and practices of the oil and gas pipeline codes ASME B31.4 and ASME B31.8. The course explains the technical bases of the pipeline code requirements and their practical application to design, construction, operation, inspection and mechanical integrity.

### Outline:

1. Overview and Codes and Standards
  - Course Contents
  - Objectives
  - Historical Perspective
  - ASME B31 Pressure Piping Codes
  - Scope of ASME B31.4 and B31.8
  - ASME B31G and B31.8S Integrity Codes
  - ASME Pressure Vessels Codes
  - API Codes and Standards
  - Other Applicable Standards
  - Integrity Management Regulation
2. Fundamentals of Pipeline Engineering
  - Contents and Structure of ASME B31.4 and B31.8
  - System Design
  - Materials
  - Detailed Design
  - Procurement and Field Construction
  - Operation
  - Inspection, Maintenance and Repairs
3. Materials
  - Material Specifications
  - API 5L Line Pipe Specification
  - Mechanical and Metallurgical Properties
  - Seamless and Welded Pipe
  - Fittings
4. Design
  - Design Loads
  - Pressure design
  - Weight Supports
  - Soil Loads and Subsidence
  - Thermal expansion and Contraction
  - Vibration

## Course Content

- Pressure Transients and Hammer
  - Subsea Pipelines Waves and Currents
  - Subsea Pipelines External Pressure
5. Construction
- Ditching
  - Bending
  - Welding Methods and Qualification
  - Welding on In-service Pipelines
  - Flange Joint Assembly
  - Non-Destructive Examination
  - Hydrotesting and Leak Testing
6. Integrity Management
- General Introduction to Corrosion
  - Mechanisms
  - Integrity Management Program
  - Inspection Techniques and Pigging
  - Assessment of Metal Loss
  - Technical Basis of ASME B31G Method
  - New ASME B31G Options
  - API 579 / ASME FFS-1
  - Assessment of Pitting
  - Assessment of Grooving
  - Assessment of Crack-Like Flaws
  - Assessment of Dents and Gouges
7. Repair Techniques
- Replacement
  - Grinding
  - Weld Deposition
  - Type A Sleeve Reinforcing
  - Type B Sleeve Pressure Containment
  - Composite Wrap Repairs
  - Mechanical Bolt-On Clamp
  - Inserted Liners
  - Hot Tap
  - Fittings

### Instructor:

Mr. George Antaki, PE, Fellow ASME, Becht Engineering, Aiken SC USA, has over 43 years of experience in design, qualification, fabrication, trouble-shooting, fitness-for-service, and repairs of ASME pressure equipment and piping systems. He is past vice chairman of API 579/ASME FFS joint committee, and past member of ASME PCC-2. He is currently member of several ASME Code Committees, and a master instructor for ASME. He is the author of three textbooks on integrity and repairs of pressure equipment and piping systems.