

ASME B31 Piping Systems Design and Integrity

OVERVIEW

This advanced, industry-focused programme delivers a comprehensive and practical understanding of the ASME B31 Code for Pressure Piping, the globally recognised standard governing the design, construction, inspection, testing, and operation of piping systems across critical industries.

Participants will gain in-depth knowledge of key code sections including **ASME B31.1**, **ASME B31.3**, **ASME B31.4**, and **ASME B31.8**, with a strong emphasis on how to correctly interpret, apply, and implement these standards within industrial projects and operating facilities.

The course goes beyond theory by integrating practical design methodologies, piping stress considerations, material selection, fabrication requirements, inspection techniques, and compliance strategies. Real-world case studies and failure investigations are used to demonstrate how improper design or code misinterpretation can lead to system failure and how such risks can be effectively mitigated.

By the end of the programme, participants will be equipped with the technical confidence and practical tools required to design compliant piping systems, ensure regulatory adherence, enhance asset integrity, and contribute to safer, more reliable engineering operations.

COURSE OBJECTIVES

Participants will gain a clear understanding of:

- Interpret and apply ASME B31 code requirements correctly
- Design piping systems in compliance with international standards
- Perform basic stress analysis and flexibility assessments
- Identify failure mechanisms and prevent piping failures
- Ensure compliance with inspection, testing, and certification requirements
- Understand code differences and applicability across industries

WHO SHOULD ATTEND

- Mechanical Engineers
- Piping Engineers
- Plant Engineers
- Maintenance Engineers
- Reliability Engineers
- Inspectors
- Technical Managers
- Boiler and Utilities Personnel

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Introduction to ASME B31 Codes

- Overview of ASME standards and structure
- Scope and applicability of different B31 codes
- Code vs standard vs specification

Materials & Design Conditions

- Material selection criteria
- Pressure, temperature, and environmental considerations
- Allowable stress and material properties

Piping Design Fundamentals

- Wall thickness calculations
- Internal and external pressure design
- Flexibility and thermal expansion considerations
- Supports, anchors, and restraints

Stress Analysis & Flexibility

- Sustained, occasional, and thermal loads
- Stress limits per code
- Expansion loops and flexibility analysis
- Introduction to piping stress software

Fabrication, Welding & Installation

- Welding processes and qualifications
- WPS, PQR, and welder certification
- Fit-up, alignment, and installation practices

Inspection, Examination & Testing

- NDT methods (RT, UT, MT, PT)
- Hydrostatic and pneumatic testing
- Inspection hold points and QA/QC documentation

Code Compliance & Documentation

- Code compliance requirements
- Documentation and certification
- Regulatory and legal considerations

Failure Analysis & Troubleshooting

- Common piping failures (corrosion, fatigue, creep)
- Root cause analysis techniques
- Case studies from industry

Differences Between Key B31 Codes

- B31.1 vs B31.3 vs B31.4 vs B31.8
- Industry-specific applications
- Selecting the correct code

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Live Online Training | 28 – 29 May 2026



Booking Contact (Approving Official) Mr/Mrs/Ms

Full Names: _____

Company name: _____

Direct Tel No: _____ E-mail: _____ Fax: _____

VAT No: _____

Address: _____

Signature _____

Person Responsible for Finance: _____ Direct Tel No: _____ Date of Payment: _____

BANKING DETAILS:

Independent Training Management Pty Ltd

Bank: FNB South Africa

Account Number: 62685879276

Branch Code: 251650

Branch: Randburg

THE FOLLOWING HEREBY CONFIRM ATTENDANCE TO THE WORKSHOP

Delegate 1: Names _____

Position: _____ E-Mail: _____

Delegate 2: Names _____

Position: _____ E-Mail: _____

Delegate 3: Names _____

Position: _____ E-Mail: _____

Delegate 4: Names _____

Position: _____ E-Mail: _____

Delegate 5: Names _____

Position: _____ E-Mail: _____

All fees are current at the time of going to print; however, we reserve the right to change them.

2. Additional Delegate Rates:

Additional delegate rates apply when bookings are made at the same time on the same course.

3. Confirmation Instructions:

On receipt of this submitted booking form and payment or purchase order you will receive a confirmation letter by email confirming your participation in the training event.

This includes a location map with directions and venue details and starting times.

4. Attendance:

Please note that no learner will be permitted to attend any training course without proof of payment or an order no.

5. Delegate Substitution:

Substitutes can be made at any time without incurring a penalty. Please inform us in writing so we can make the necessary arrangements for the new learner.

6. Payment:

Payment can be made by cheque or by electronic transfer, and must be received 5 working days prior to the commencement of the course.

Please quote the reference number from your invoice and organisation name so that payments can be tracked. All cancellations must be done in writing and emailed directly to Independent Training. Management Inform us immediately if you have to re-schedule or cancel the booking so that we can inform the caterers and conference venue.

The following charges apply if you cancel:

- 11 - 30 days before a course = 10% of the course fee

- 6 – 10 days before a course = 20% of the course fee

- 4 – 6 days before a course = 30% of the course fee

- 1-3 days before a course = 50% of the course fee