ASME Training Programs

for Engineers and Technical Professionals

2014

India Edition

Phone: **+91.124.430.8413**

Website: **go.asme.org/indiatraining**

ASME Training & Development

Setting the Standard for Workforce Learning Solutions

WHY SELECT ASME FOR YOUR WORKFORCE LEARNING SOLUTIONS?

No other engineering training provider gives you The ASME Advantage:

1 The Only Training Program Developed, Approved and Delivered by the People Who Write the Codes

- More than 250 different technical and professional development courses showcase best practices in mechanical engineering and engineering management, with topical, practical and relevant content covering the entire product life cycle ranging from selection of materials, design of equipment, fabrication, erection, assembly, inspection, testing, O&M and repair
- Only ASME-approved courses ensure each participant with access to ASME Standards or Code Books for reference during the program
- ASME is the only provider in its category in India offering courses accredited by the International Association of Continuing Education and Training (IACET), complying with the ANSI / IACET Standard
- Each ASME course awards an ASME Certificate upon successful completion, with Continuing Education Units (CEUs) and / or Professional Development Hours (PDHs) available to participants
- ASME delivers continuing education programs in Live, Online eLearning and Onsite In-Company training formats to accommodate budgets, schedules and business requirements

2 Professional Instruction by ASME-Authorized Industry Experts

- Eminently qualified faculty consists exclusively of ASME-approved Authorized Training Instructors, each a recognized subject matter expert in his/her respective field who is subjected to rigorous ASME pre-screening and periodic re-evaluation
- Most code courses are presented by ASME Code Committee members who understand the latest code or standard updates and can communicate its impact on safety, quality and integrity
- Leadership and management courses are delivered by seasoned industry-experienced professionals

3 Unsurpassed ASME Leadership in Quality Curricula Development

- Only ASME-accredited courses are peer reviewed to ensure accuracy, comprehensiveness and relevance by ASME Technical Code Committee members who are responsible for writing the codes and standards
- More than 50 years' experience creating, producing and delivering engineering training programs, and each year more than 10,000 engineers rely on ASME training to boost their technical competence and heighten their managerial expertise
- ASME course curricula and materials are constantly evaluated and updated to meet the changing needs of our clients and the industries in which they compete – *as well as to meet the standards for quality set by ASME*

Plus… ASME Course Participants Receive One-Year FREE Membership to ASME, which includes:*

- Free subscription to ASME SmartBrief daily e-newsletter
- Free online access to ASME WorkSmart℠ for world-class technical content
- Complimentary one-year digital subscription to industry-leading monthly *Mechanical Engineering* magazine
- Online networking opportunities with peer groups, ASME Sections and Technical Divisions

... and so much more!

* One-Year FREE Membership Offer available only to course registrants who are not current ASME Members

For More Information

Rohit Nehru, ASME India • **Email:** NehruR@asme.org • **Phone:** +91.124.430.8413 • **Website:** go.asme.org/indiatraining

WELCOME TO THE WORLD OF ASME TRAINING & DEVELOPMENT

ASME Training & Development offers continuing education opportunities for engineers and technical professionals around the globe. We train over 10,000 engineers annually through live and online learning programs covering a diverse range of engineering topics.

Our expert instructors deliver relevant and applicable courses from pressure vessels and piping to welding and power plant construction.

This catalog describes the training programs offered in India during 2014. Any one of these courses can also be conducted in your company premises and tailored to your needs.

For more information and to register, please visit: www.asme.org/indiatraining or contact ASME India Training & Development by phone +91.124.430.8413 or email NehruR@asme.org.

ABOUT ASME

ASME helps the global engineering community develop solutions to real world challenges. Founded in 1880 as the American Society of Mechanical Engineers, ASME is an international not-for-profit professional organization that enables collaboration, knowledge sharing and skill development across all engineering disciplines, while promoting the vital role of the engineer in society.

ASME codes and standards, publications, conferences, continuing education and professional development programs provide a foundation for advancing technical knowledge and a safer world.

For more information, visit www.asme.org

• New York • Brussels • Beijing • Washington, DC • New Delhi

TABLE OF CONTENTS

ASME has been accredited as an Authorized Provider by the International Association for Continuing Education and Training (IACET), 1760 Old Meadow Road, Suite 500, McLean, VA 22102; +1.703.506.3275. In obtaining this approval, ASME has demonstrated that it complies with the ANSI/IACET Standard which is recognized internationally as a standard of good practice. As a result of its Authorized Provider accreditation status, ASME is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET Standard.

BOILERS AND PRESSURE VESSELS

BPV Code, Section I, Power Boilers: Design, Fabrication, Inspection and Repair (PD665)

ASME Code Course

This course provides detailed knowledge of the responsibilities of personnel involved in the design, manufacturing, fabrication and examination of new power boiler plant components and new construction activity as defined by Section I of the ASME Boiler and Pressure Vessel Code (BPVC).

The objective of the course is to enhance knowledge and understanding of the requirements for design and construction of power boilers in accordance with Section I of the ASME Boiler and Pressure Vessel Code.

On completion of this course, delegates will be able to:

- Describe the purpose of the Sections of the ASME Boiler and Pressure Vessel Code
- Explain the rules and requirements in Section I for the design and construction of power boilers
- Describe the use of Section II Materials and their allowable stresses
- Explain the basic rules for fabrication of power boilers
- Describe the process for quality control and certification in Section I

Who should attend this course:

Engineers, managers and quality personnel involved in manufacturing, fabrication and examination of components or parts for power boilers or the construction of a power boiler built to the requirements of U.S. Codes & Standards, including those who are or will be directly or indirectly involved in the design, analysis, construction, maintenance or operation of a power boiler

Duration: 4 Days

BPV Code, Section VIII, Division 1: Design and Fabrication of Pressure Vessels (PD442)

ASME Code Course

Based on the rules for pressure vessel design and construction, this course is a comprehensive introduction to the requirements of Section VIII, Division 1 including background, organization, design, materials, fabrication, inspection, testing and documentation of pressure vessels. It covers the more commonly applied subsections and paragraphs, and includes a practical discussion of individual problems and situations.

Special features include: an overview of code organization, offering of updated editions and addenda, and expert instruction on how to prepare and submit an inquiry to the Code Committee for Code Interpretation, Code Cases or Code Revision.

On completion of this course, delegates will be able to:

- Describe the background of the Code
- Explain how to apply the Code rules to more common design and fabrication situations
- Identify the calculations for some of the loadings and situations not addressed by the Code
- Describe the preparation of design specifications, design reports, data reports, and other documentation

Who should attend this course:

Primarily beginners but also experienced pressure vessel designers who would like to update their knowledge of the Code

Duration: 3 Days

BPV Code, Section VIII, Division 2: Alternate Rules for Design of Pressure Vessels (PD448)

ASME Code Course

This course provides a practical comparison of the new rules with the former rules of Division 2. It also covers other international codes, including a discussion of why the new requirements were instituted; this course explains the design margins and their effect on required thickness. While emphasizing design and analysis rules, it covers all aspects of construction.

On completion of this course, delegates will be able to:

- Explain how the requirements of Divisions 1 and 2 of Section VIII compare
- Explain theories of failure and design margins of various codes
- Describe the General Requirements of the new Division 2
- Identify design rules and stress analysis methods
- Describe fatigue analysis
- Identify materials and fabrication requirements
- Explain Nondestructive Examination (NDE) requirements, pressure testing and pressure relief requirements

Who should attend this course:

Beginners as well as experienced personnel with some degree of background with design, analysis, fabrication, purchasing, repair and / or inspection of pressure vessels, as well as supervisory and regulatory personnel

Duration: 4 Days

BOILERS AND PRESSURE VESSELS *continued*

Inspection, Repairs, and Alterations of Pressure Equipment (PD441)

This course introduces the requirements of various codes and standards for the inspection, repair and alteration of pressure equipment, and in particular, pressure vessels. The course covers the requirements of the National Board Inspection Code and the API-510 Pressure Vessel Inspection Code in detail as well as an introduction to API-579, Fitness-for-Service. The activities of ASME's Post Construction Committee are explained and the documents published by this committee are discussed.

On completion of this course, delegates will be able to:

- Describe the latest developments in the rapidly advancing field of pressure equipment inspection and repairs
- Identify the work being performed by API, ASME, and PVRC in the related areas
- Identify the post-construction codes and standards and the interrelation of various documents
- Explain the responsibilities of the users, manufacturers, repair organizations, regulatory agencies and authorized inspectors
- Identify detailed requirements of the NBIC
- Explain the differences between the NBIC and API-510
- Describe introductory portions of the ASME post-construction standards

Who should attend this course:

Individuals from manufacturers, repair organizations, inspection agencies and other organizations involved with maintenance and repair of pressure equipment. This course is intended for beginners, as well as experienced personnel wishing to update their knowledge.

Duration: 2 Days

Inspection and Fitness for Service, Flaw Evaluation of Pressure Equipment (PD538)

This course provides a comprehensive introduction to the requirements of various codes and standards, for the inspection, repair and alteration of pressure equipment, and in particular, pressure vessels. It covers the requirements of the US National Board Inspection Code, the API-510 Pressure Vessel Inspection Code, and API-579, Fitness-for-Service. The course discusses in detail the flaw evaluation procedures and assessments outlined in API-579. It covers a number of areas, including brittle fracture, metal loss, blisters, hydrogen damage, weld misalignment, and shell distortions. The course also provides examples demonstrating the application of the rules.

On completion of this course, delegates will be able to:

- Describe the work being performed by API, ASME, NBIC and PVRC in inspection and fitness for service
- Explain the relationships among post construction codes and standards
- Explain the responsibilities of the users, manufacturers, repair organizations, regulatory agencies and authorized inspectors in these areas
- Describe the process of assessment for repairs and alterations and the documentation requirements in API-579

Who should attend this course:

Individuals from manufacturers, repair organizations, inspection agencies and other organizations involved with maintenance and repair of pressure equipment. This course is intended for beginners, as well as experienced personnel wishing to update their knowledge.

Duration: 2 Days

ASME BPV Code, Section VIII, Division 2, Part 5: Design by Analysis Using ANSYS (PD707)

This course, which complements BPV Code, Section VIII, Division 2, provides a hands-on approach to the basic design by analysis requirements in Part 5. This course provides examples of the application of the procedure, as outlined in the Code. The course also discusses protection against plastic collapse and local failure as well as elastic stress and elastic plastic analysis.

On completion of this course, delegates will be able to:

- Select element type and create Finite Element mesh for a given geometry using ANSYS
- Apply constraints and loads
- Create Stress Classification Lines (SCLs) for elastic analysis
- Review output at SCLs
- Compare output with Code allowable stresses
- Identify the convergence of limit load and elastic-plastic analysis
- Describe strain criteria for protection against local failure

Who should attend this course:

Designers, analysts, and other professionals working with pressure vessels, as well engineering students interested in pressure vessel design

Duration: 2 Days

BOILERS AND PRESSURE VESSELS *continued*

Practical Application of Section V Nondestructive Examination (PD705)

This 5-day course covers the fundamentals of nondestructive examination (NDE). It will guide you in the application of practical NDE techniques for flaw detection using the following methods:

- Radiographic Testing (RT)
- Ultrasonic Testing (UT)
- Penetrant Testing (PT)
- Magnetic Particle Testing (MT)

The course also explains how these NDE procedures comply with ASME BPV Code requirements in Sections V, VIII and IX as well as providing the requirements for NDE Personnel Qualifications for each of the test methods. The course is also available in the individual modules listed below.

On completion of this course, delegates will be able to:

- Explain the requirements of NDE
- Apply practical NDE techniques including exposing and processing RT film, thickness measurements and flaw detection using UT
- Describe how NDE procedures comply with BPV Code requirements
- Explain NDE Personnel Qualifications

Who should attend this course:

The course is designed for experienced personnel, such as QC supervisors, QC Engineers and Authorized Inspectors, who manage or review NDE activities carried out in accordance with ASME Section V in shops involved in pressure vessel fabrication. The course is not intended for NDE operators.

Duration: 5 Days

Radiographic Testing (PD709)

This 2-day course covers the fundamentals of radiographic testing (RT). It provides guidance on the practical application of this NDE technique to meet the requirements of the ASME BPV Code, Section V. Topics include electromagnetic radiation; the process of radiography; safety aspects; geometric exposure principles; gamma ray sources; the effect of radiographic screens; and the inverse square law, among others. Also covered are RT procedures, including exposure techniques; film characteristic (H&D) curves; film density, radiographic sensitivity; characterizing image indications; and product related discontinuities and their typical images.

On completion of this course, delegates will be able to:

- Describe the fundamental principles, basic techniques and equipment used in RT
- Describe the process and procedures for performing RT
- Apply the process of RT

Who should attend this course:

This course is designed for QC supervisors, engineers and authorized inspectors involved in Radiographic Testing for pressure vessels.

Duration: 2 Days

Penetrant Testing and Magnetic Particle Testing (PD710)

Liquid penetrant examination (PT) is a nondestructive method of revealing discontinuities that are open to the surfaces of solid and nonporous materials. Magnetic particle examination (MT) is a nondestructive method of locating surface and subsurface discontinuities in ferromagnetic materials.

This module introduces penetrant testing (PT) and the PT method, explains and discusses PT procedures, and provides experience using PT in a controlled situation. It discusses the basic principles, equipment and consumables as well as PT procedures and techniques, including surface preparation, application and removal, inspection and evaluation of indications.

The course also covers magnetic particle testing (MT) and the MT method. It explains and discusses MT procedures, and provides experience using MT in a controlled situation. Topics covered include magnetic fields around magnetized materials; paramagnetic, diamagnetic and ferromagnetic materials; magnetization methods and techniques; testing equipment; and the principles of demagnetization.

On completion of this course, delegates will be able to:

- Describe the fundamental principles, the basic techniques and equipment used in PT and MT
- Describe the process and procedures for PT and MT
- Apply the process of PT and the process of MT

Who should attend this course:

This course is designed for QC supervisors, engineers and authorized inspectors involved in Penetrant and Magnetic Particle Testing for pressure vessels.

Duration: 2 Days

Ultrasonic Testing (PD708)

This 2-day course covers the fundamentals of ultrasonic testing (UT). It provides guidance on the practical application of this NDE technique to meet the requirements of the ASME BPV Code, Section V. It also includes hands-on application of ultrasonic testing on a welded plate.

Topics include, among others, the nature of sound waves, attenuation, reflection, refraction, mode conversion, acoustic impedance, Snell's law, Fresnel and Fraunhofer effects, calibration requirements, instrument linearity and ASME Code requirements (calibration blocks, etc.)

On completion of this course, delegates will be able to:

- Explain the fundamentals of ultrasonic testing
- Apply practical techniques for flaw detection using UT
- Explain how UT procedures comply with ASME BPV Code requirements
- Describe the requirements for NDE Personnel Qualifications for UT

Who should attend this course:

This course is designed for QC supervisors, engineers and authorized inspectors involved in Ultrasonic Testing for pressure vessels.

Duration: 2 Days

DESIGN AND MATERIALS

CAD/CAM (Including Introduction to Finite Element Analysis – Basic) (PD668)

This course provides hands-on practice sessions to solve engineering design problems. Ranging from the simple to very complex, these exercises will help engineers design a product with speed and efficiency. At the same time the course bridges the knowledge gap resulting from significant technological advances in the areas of computer-aided design and computer-aided manufacturing.

On completion of this course, delegates will be able to:

- Explain what Computer Aided Design is
- Describe the principles of Geometrical Modeling
- Understand Curve and Surface Fitting in Automation Environment
- Perform Manufacturing Simulation in CAD/CAM Environment
- Perform Computer Aided Solid Modeling Using *Pro-Engineer*
- Enjoy hands-on experience with *Pro-Engineer* Software

Who should attend this course:

Engineers who wish to embark on a design career and who are currently in jobs responsible for designing parts and assemblies

Duration: 3 Days

Advanced Finite Element Analysis (PD646)

Finite Element Analysis (FEA), originally developed for aerospace structural analysis, has grown to provide an effective tool for a wide variety of engineering problems. This course provides an advanced look at FEA capabilities, emphasizing the various aspects of structural analysis. Based on practical application of ANSYS software and specific work examples, this course builds on the introductory level course to provide a fuller appreciation of the advanced uses of FEA. The course consists of six modules, all with practical application using ANSYS.

The course topics can also be abstracted to provide a useful guide for the use of FEA for non-structural applications.

On completion of this course, delegates will be able to:

- Describe the concept of structural dynamics, including modal and harmonic response analyses, and transient dynamic analysis
- Explain nonlinear structural analyses
- Explain substructuring and submodeling
- Demonstrate design optimization methods available for direct command input

Who should attend this course:

Anyone wishing to gain an increased knowledge of the application of FEA. Delegates should have a basic knowledge of FEA principles, including terminology, basic mathematical principles, and shape and interpolation functions.

Duration: 3 Days

FLUIDS AND HEAT TRANSFER

Fundamentals of Pumps and Their Selection for Optimum System Performance (PD670)

This course provides an introduction to pumps – the way they work, different types, and some basic applications. It discusses the flow of fluids through pipes, as well as the variables that affect the flow. It takes a close look at centrifugal and positive displacement pumps. This course examines the requirements necessary for the selection of pumps for optimum system performance.

On completion of this course, delegates will be able to:

- Identify different types of pumps, including centrifugal and positive displacement pumps
- Recognize the advantages and the limitations of each type of pump
- Calculate the flow of liquid through piping systems
- Calculate the pressure drop in pipes, valves, and fittings
- Select the appropriate type of pump for a specific application

Who should attend this course:

Anyone who wants an introduction to and a basic understanding of the types of pumps and their applications

Duration: 2 Days

Fundamentals of Valves and Their Selection for Optimum System Performance (PD671)

Valves are important components in any piping system - without valves, the piping system cannot stop, start, or regulate the flow. Choosing the best possible valve for a particular application will help ensure efficient, dependable, and economical performance.

This course introduces the different types of valves – the way they work and some of the basic applications. It provides an overview of the considerations involved when choosing the appropriate valves for a system.

On completion of this course, delegates will be able to:

- Describe valves and how they operate
- Identify different types of valves
- Recognize the advantages and disadvantages of each type of valve
- Outline the considerations involved in selecting the appropriate type of valve for a specific application
- Identify standards and other guidance applicable to valve selection and use

Who should attend this course:

Anyone who wants an introduction to and a basic understanding of the types of valves and their applications

Duration: 2 Days

FLUIDS AND HEAT TRANSFER *continued*

Fundamentals of Pumps and Valves and Their Selection for Optimum System Performance (Combo Course) (PD679)

This course combines the Selection of Pumps and the Selection of Valves courses into a 3-day course. It introduces how they work, the different types and the basic applications for both pumps and valves.

On completion of this course, delegates will be able to:

- Identify different types of pumps and valves
- Recognize the advantages and the limitations of each type of pump and each type of valve
- Calculate the flow of liquid through piping systems
- Calculate the pressure drop in pipes, valves, and fittings
- Select the appropriate type of pump for a specific application
- Describe valves and how they operate
- Outline the considerations involved in selecting the appropriate type of valve for a specific application
- Identify standards and other guidance applicable to valve selection and use

Who should attend this course:

Anyone who wants to improve their knowledge of pumps and valves

Duration: 3 Days

GEOMETRIC DIMENSIONING AND TOLERANCING

Fundamentals of Geometric Dimensioning and Tolerancing in Design Through Manufacturing (for GDT Technologist Level) (PD694)

This course covers the geometric dimensioning controls used on mechanical drawings. It explains the theoretical and practical concepts of each of the geometrical controls relative to design, tooling, production and inspection. Topics include the concept of datum as well as the controls for form, orientation, location, profile and runout.

On completion of this course, delegates will be able to:

- Define Geometric Dimensioning and Tolerancing (GD&T)
- Explain the importance of GD&T and the use of ASME Y14.5
- Define the concept of Datum
- Explain the use of tolerance controls for form, orientation, location, profile and runout

Who should attend this course:

Anyone who uses the ASME Y14.5 Dimensioning and Tolerancing standard, including designers, drafters, quality, procurement, tooling production, manufacturing and shop personnel

Duration: 3 Days

Advanced Geometric Dimensioning and Tolerancing in Design Through Manufacturing (for GDTP Senior Level) (PD695)

This course provides an in-depth look at the concepts in the ASME Y14.5-2009 Standard. It compares various geometric tolerancing concepts, and discusses the application of advanced GD&T controls, including composite profile and composite position tolerances, through case studies and exercises. It also focuses on applying correct datum structures and geometric tolerances on detail parts based on functional requirements and cost implications for the final assembly.

The course also prepares participants for the Geometric Dimensioning and Tolerancing Professional (GDTP) Senior Level examination, and includes a practice exam based on ASME GDTP-Senior BOK-Guide to prepare individuals for ASME GDTP-Senior Certification.

It is an advanced level program for experienced engineers who are familiar with GD&T symbology and interpretation.

On completion of this course, delegates will be able to:

- Apply GD&T controls on detail parts of an assembly using real-world examples
- Conduct stack analysis to understand the effect of variation on built assemblies
- Apply principles and applications of Hard and Soft gauging
- Describe enhancements in the Y14.5-2009 standard and ISO Standards

Who should attend this course:

Engineering professionals in product design, manufacturing, process engineering and quality assurance

Duration: 2 Days

NUCLEAR

BPV Code, Section III, Division 1: Rules for Construction of Nuclear Facility Components (PD184)

ASME Code Course

This course presents a practical yet comprehensive overview of the BPV Code, Section III, Division 1 (nuclear section), including interfaces with Sections II, V, and IX. Every Subsection in Section III is covered in sufficient detail to provide an understanding of the Code processes and methodology, including the ASME Accreditation processes.

On completion of this course, delegates will be able to:

- Describe the contents of Section III, including its current scope and exclusions
- Describe the functions performed by Authorized Inspection Agencies and Authorized Nuclear Inspectors
- List the Quality Assurance requirements as they apply to Material Organizations and N-Certificate holders
- Explain the use and significance of ASME Code Stamps and the new ASME Code Stamp
- Describe the Process for ASME Accreditation
- List the responsibilities of various ASME Certificate Holders
- Describe the purpose of the different Code Data Reports and their required signatories
- Explain how Section III, interfaces with Sections II, V, and IX
- Explain how the ASME Code is becoming a global standard

Who should attend this course:

Nuclear regulators, technical organizations, nuclear generating facility owners, equipment and material organizations, installers and authorized inspection agencies

Duration: 4 Days

BPV Code, Section III: Advanced Design and Construction of Nuclear Facility Components (PD644)

ASME Code Course

This advanced course details Code requirements for the design, fabrication, construction and life extension of nuclear power plants. Covering all aspects of the nuclear pressure boundary as well as the application of methods for fabrication of nuclear pressure boundary components, it discusses the Code requirements for Nondestructive Examination (NDE) techniques as well as hydro testing and leak testing.

Through a combination of information and case studies based on real-world problems, the course provides the required knowledge for professionals who are involved in the design, fabrication, construction and life extension of nuclear power plant (NPP) components.

On completion of this course, delegates will be able to:

- Explain advanced concepts related to design by analysis and design by rule
- Compare ASME BPV Code with other international codes
- Identify welding and heat treatment requirements
- Describe what is required for nondestructive examination and testing

Who should attend this course:

Nuclear power plant designers, stress analysts, QA and inspection personnel, regulators, and reactor, welding, operations, and utility engineers will all benefit from this course

Duration: 4 Days

PIPING AND PIPELINES

ASME B31.1 Power Piping Code: Design, Fabrication, Assembly, Erection, Inspection, Maintenance and Repair (PD678)

ASME Code Course

This intensive course details the latest Power Piping Code requirements – key elements in creating the more effective piping systems today's competitive environment demands. This course explores the background, rules and trends in piping design, analysis, and fabrication – all vital elements of power, industrial and institutional plant construction and maintenance – within the context of meeting the requirements and intent of ASME B31.1 and its appendices.

On completion of this course, delegates will be able to:

- Explain the principal failure modes of piping components and where to look for them
- Explain the difference between pressure component design and structural design
- Describe the layout and simplified analysis techniques
- Qualify nonstandard fittings and joints and develop stress intensification factors
- Identify materials selection and limitations, fabrication rules and their bases
- Explain welding qualification requirements, inspection, examination, and testing requirements

Who should attend this course:

Engineers involved in piping design and analysis, practicing piping engineers requiring background on Code compliance, and piping fabricators and suppliers wishing to understand the relationship of fabrication and manufacture to the design and construction of piping systems

Duration: 5 Days

ASME B31.3 Process Piping Code: Design, Fabrication, Assembly, Erection, Inspection and Testing (PD643)

ASME Code Course

This course provides an introduction to the ASME 31.3 Process Piping Code and covers the B31.3 requirements for design, analysis, materials, fabrication, testing and inspection of process piping systems. It explores the rules for various components including fittings, connections, bends, valves and specialty components. Other topics include dimensions and ratings of components, fluid service requirements for joints, piping flexibility and support, welding, heat treatment, bending and forming, brazing and soldering, assembly, erection, examination and inspection.

On completion of this course, delegates will be able to:

- Identify the responsibilities of personnel involved in the design, fabrication, assembly, erection, examination, inspection, and testing of process piping
- Describe the scope and technical requirements of the ASME B31.3 Code
- Apply and implement the quality requirements that are defined in the ASME B31.3 Code.

Who should attend this course:

Engineers, managers and quality personnel involved in the design, manufacturing, fabrication and examination of process piping that is being built to the requirements of U.S. Codes and Standards

Duration: 5 Days

PIPING AND PIPELINES *continued*

B31.8 Gas Transmission and Distribution Piping Systems Code (PD370)

ASME Code Course

ASME B31.8 is the most widely used code for the design, operation, maintenance, and repair of natural gas distribution and transmission pipelines. This course explains the current code provisions, the principal intentions of the code, and how the code should be used, with the emphasis on transmission pipelines.

On completion of this course, delegates will be able to:

- Explain the causes and modes of pipeline failure
- Describe considerations for material specifications, pipe manufacturing and pipe joining
- Estimate pipeline stresses from external loadings
- Explain how to evaluate pipeline defects
- Identify pipeline repair techniques
- Identify the elements of pipeline integrity
- Explain how code requirements address these issues

Who should attend this course:

Engineers as well as personnel involved in code compliance, operation and maintenance and regulatory functions

Duration: 3 Days

B31.8S Integrity Management and Maintenance of Gas Pipelines Code (PD594)

ASME Code Course

This course discusses how to develop and execute an Integrity Management Program (IMP) for gas transmission and distribution pipeline systems, based on ASME B31.8S, Managing the Integrity of Gas Pipelines. Topics include data gathering, risk assessments, integrity assessments, threat mitigations, and repair methods. The course provides best integrity management practices and requires some pipeline experience.

On completion of this course, delegates will be able to:

- Develop and execute an Integrity Management Program
- Describe approaches for risk assessments
- Explain the purpose of integrity assessments
- Describe threat mitigations
- Explain how to use the results of integrity assessments
- Describe appropriate repair methods and practices

Who should attend this course:

Senior pipeline managers and supervisors, safety and regulatory personnel with responsibility for pipeline integrity and personnel responsible for training and Implementation of an IMP program

Duration: 3 Days

B31Q Pipeline Personnel Qualification (PD608)

ASME Code Course

This course describes the systems and processes used to qualify pipeline personnel required by ASME B31Q. It covers personnel whose duties have an impact on the safety and integrity of natural gas transmission and distribution pipelines. The course discusses the tasks required for qualification, the process for qualifying individuals, including training and personnel evaluations and the documentation and development of the qualification program.

On completion of this course, delegates will be able to:

- Explain why qualification is necessary
- Describe the scope of a qualification program
- Identify when training is required
- Describe how to perform acceptable evaluations
- Explain the various aspects of qualifications
- Measure program effectiveness
- Describe documentation requirements
- Describe the implementation of the qualification program

Who should attend this course:

Managers engaged in personnel qualification for gas pipelines as well as those involved in the design, construction, operation, and maintenance of pipelines whose responsibilities include management of qualified personnel

Duration: 3 Days

WELDING AND BRAZING

BPV Code, Section IX: Welding and Brazing Qualifications (PD645)

ASME Code Course

This course covers the layout, scope, and use of Section IX of the ASME Boiler and Pressure Vessel Code through illustrative examples. It explains and demonstrates the rules for qualification of welding and brazing procedures and personnel. Attendees learn about the basic rules for the use of Section IX in conjunction with other construction codes. These rules include the identification of responsibilities for procedure and personnel qualification as well as the activities that can be subcontracted by the manufacturer.

The course also presents basic characteristics of the welding processes as a basis for understanding the essential and nonessential variables that are listed for the qualification of procedures and personnel. Some basic metallurgy is presented to explain the philosophy supporting the essential variable rules of the Code. Examples of welding procedure and personnel qualification documentation are also presented to demonstrate how the essential and nonessential variables are identified and documented. Finally, a brief discussion and demonstration will be conducted to show how supplementary essential variables can be addressed when impact toughness is required.

On completion of this course, delegates will be able to:

- Explain the layout and scope of Section IX
- Describe the qualification of procedures and personnel in Section IX
- Identify the basic features of the commonly used welding processes
- Explain the concept of carbon equivalent and hardenability of steels
- Identify the nonessential variables and essential variables in the WPS
- Explain how to prepare and modify the PQR and WPS from fundamental data
- Identify supplementary essential variables

Who should attend this course:

Engineers, supervisors, quality assurance/control personnel, auditors, or anyone else working in the boiler, pressure vessel, petrochemical, biopharmaceutical, or any other industry whose welding qualifications are governed by Section IX of the ASME Boiler and Pressure Vessel Code

Duration: 3 Days

Principles of Welding (PD636)

This course provides an introduction to the principles of welding technology. It describes the process of welding; the electric circuits that are used to generate welding arcs, material properties, and the metallurgical and dimensional effects of welding on structures. The course also provides an overview of weld design concepts including efficient weld sizing and communication of welding information to welders through procedures & symbols on drawings.

The course is an ideal prerequisite to the ASME BPV Code Section IX course for those individuals with little or no prior welding experience.

On completion of this course, delegates will be able to:

- Explain common welding processes
- Describe basic weld design concepts, such as weld size determination and communication through weld and welding symbols on drawings
- Explain how welding affects various welded materials, including metallurgical and dimensional changes
- Describe the advantages and disadvantages of various arc-welding processes
- Explain the advantages and disadvantages of each process
- Identify weld inspection techniques, including non-destructive examination
- Identify common problems with welding processes and explain how to troubleshoot them

Who should attend this course:

Engineers, managers and quality personnel who wish to understand the fundamental principles of welding to control and troubleshoot welding processes, reduce operating cost and improve the quality of their product

Duration: 2 Days

Welding of Duplex Stainless Steels (PD696)

This course covers the important aspects related to the welding of duplex stainless steels.

It reviews the advantages of duplex stainless steels, including superior resistance to corrosion and cracking as well as their higher yield strength and cost competitiveness in comparison to conventional austenitic stainless steels and ferritic steels. The course also discusses the duplex austenitic-ferritic phase balance and the mechanical and corrosion resistance properties. It is essential that a proper understanding of the welding discipline is practiced for duplex stainless steels.

On completion of this course, delegates will be able to:

- Describe the micro-structural design of duplex stainless steels
- Explain the mechanical and corrosion resistance properties of duplex stainless steels
- Describe various types of duplex stainless steels
- Describe the role of different alloying elements in achieving required properties
- Explain the effect of welding thermal cycle, cooling rates and heat input on phase balance and corrosion resistance of weld and HAZ
- Develop the required welding procedures for weld soundness, mechanical properties and corrosion resistance
- Qualify Welding Procedures and Personnel for defect free and economical welding
- Meet requirements of various code, recommended practices and job specifications.

Who should attend this course:

Welding & QA /QC personnel for process design, LSTK agencies, project consultants, inspection agencies, suppliers, equipment fabricators, pipe and piping contractors as well as project operation teams

Duration: 1 Day

Representative ASME Instructor Profiles

With a rich 30-year professional experience in welding, design and inspection, this ASME instructor is involved in carrying out appraisal of pressure vessels to various national and international Codes including ASME Section I, IV, VIII Division 1, VIII Division 2, TEMA, AD-MERKBLATTER, PD5500, API, Australian Standards and IS. He also specializes in finite element analysis using ANSYS and pipe stress analysis. He is an Authorized Inspector of ASME Code Symbol stamped boilers and pressure vessels and has 12 international and national technical publications and presentations to his credit. The Instructor holds Professional qualification of ASNT Level III in PT, MT, RT and UT and is an active member in the ASME BPV Section XII Committee (subgroup Design and Materials) and many Indian and International Technical societies such as IIW, ISNT, IEI, ASME, AWS, ASNT and ASM.

An ASME Fellow who is internationally recognized as a specialist in piping, valves, materials as well as codes and standards, this ASME instructor has served as a member of the ASME Council on Standards and Certification, Vice Chair of the ASME Board on Pressure Technology Codes and Standards, member, chair and vice chair of several national and international level code committees, and has made invaluable contributions to codes and standards. Currently Chairman of the ASME B31 Standards Committee on Pressure Piping Code, and has also served as Chair of ASME B31.1, Power Piping Code Committee (2003-2009) and several other committees. He is the Vice Chairman, ISO TC5/SC10, Subcommittee on Metallic Flanges and their Joints since 2003 and also a Member of ISO/TC/153, USA Technical Advisory Group, Main Committee since 2001 on Design, Manufacture and Marking of Valves. He has 45 years of design engineering experience on a variety of domestic and international mega fossil and nuclear power and other projects, and has provided engineering advice and code interpretations to senior management and day-to-day guidance to all business lines of the BECHTEL Corporation, a global design and construction company. He has published articles on valves, authored the "Pipeline" article for the 7th Edition of Science and Technology Encyclopedia, acted as author and Editor-in-Chief of The Piping Handbook, Sixth and Seventh Editions, (1992 and 1999) and wrote the first edition of the Piping Data Book (2002).

An Engineering professional of high repute, this ASME instructor has more than 30+ years' experience in the process industry relating to erection of boilers, mineral oil heaters, incinerators and water treatment plants. During his 23 years' working years at Thermax Ltd (formerly Wanson India Pvt Ltd), he worked on steam, water, mineral oil and fuel oil piping along with pumps supervising the erection of chimney, ducting, tanks and structures. Additionally, he was also responsible for training engineers in the Process Heat division and Vapor Absorption Division of the company. He served as Vice President Operations for the engineering, maintenance and projects divisions of Texmaco Group in Indonesia covering sectors like textiles, garments, polyester filament yarn, vegetable oil, leather and automobiles. He is a practicing engineering consultant to industries and business enterprise, providing solutions in the area of process boilers, heaters, water treatment plants, pumps and heating and cooling problems.

A Dimensional Management Process Scientist in the Dimensional Management group at an aerospace company based in Wichita, Kansas, US, this ASME instructor has more than of 20 years' broad variation analysis experience in the automotive, aerospace and biomedical industries. He is also a Certified Geometric Dimensioning & Tolerancing Professional-Senior (GDTP-S) by ASME and holds certification in Six Sigma Black Belt (SSBB). He has extensively used variation analysis software to conduct up-front assembly build analyses to predict assembly variation and eliminate build issues in manufacturing. The instructor has also been a member of the design team at Varatech Inc. for the development of Sigmund products and is a co-patent holder in Tolerance Simulation Analysis. He earned his MS in Industrial Engineering from University of Oklahoma in the United States.

This ASME Instructor is a graduate engineer with B.Tech in Metallurgical Engineering from I.I.T. Bombay, with a post graduate qualification of ME in Metallurgical Engineering from McMaster University, Hamilton in Canada. An International Welding Engineer Certificate holder from the International Welding Institute and a Fellow Member of the Indian Institute of Welding, he has more than 30 years' experience in the field of welding application as a Senior Welding Engineer with M/S Larsen & Toubro Ltd., Mumbai and later as Technical Manager, Welding Application with M/S Advani- Oerlikon Ltd. Mumbai. He is a well-known expert in Welding management and control requirements and has developed, qualified & implemented welding procedures for various metals and alloys using GTAW, SMAW, GMAW, FCAW and SAW processes involved in fabrication of Pressure Vessels, Heat Exchangers, Process Equipment, Pipes, Pipelines, Ships, Industrial Structures, Bridges, Cranes, Construction Equipment and Machinery.

This ASME Instructor holds a post graduate M Sc (Engineering) degree in Valve Design and Technology from Cranfield Institute of Technology, United Kingdom, and has more than 25 years' experience in the valve industry. He heads the Design & Engineering and Quality Division at the Valve Manufacturing Unit of Larsen & Toubro Limited, Coimbatore. He formerly worked at Audco India Limited, which won Department of Science and Industrial Research (DSIR) National Award for Outstanding in house R&D achievement in the year 2006 under his leadership. He has been deeply involved in Design and Development of different type of valves for various industrial applications including nuclear and in setting up of the special testing arrangements for Functional, Fire, Cryogenic & Fugitive Emission Tests and Clean Room. In the past he served in Product Engineering and Quality Control in Oilfield Equipment (Wellhead and Christmas Trees) and later for all its plants where he spearheaded Quality Team. He also carries an expertise in CE and ATEX Marking, Safety, QMS and EMS compliances. He was instrumental in getting ASME N and NPT stamps. He has applied for 14 design patents which are at the grant stage and has published five international papers in ASTM, The Society for Experimental Mechanics Inc., USA, and other international conferences.

This ASME instructor carries over 40 years' experience in the Oil and Gas Industry, having earned a Bachelor of Engineering in Mechanical Engineering and a post diploma in Metallurgical Engineering, along with a Masters Degree in Business Administration. He is an API Authorized surveyor and in the past has worked with American Bureau of Shipping (ABS Group) and Velosi Certification Services in Middle East as an ASME / NBBI Authorized Inspector Supervisor and Boilers and Pressure Vessel Inspector USA, State of Vermont. He is a certified API 653-Authorized Inspector for Repair, Alteration and Reconstruction of Above Ground Storage Tanks. He is also an AWS Certified Welding Inspector and an ASNT Level-III in UT, RT, MT.

What Some of Our Past Attendees Have to Say...

"Excellent content coverage"

Dilip Kumar Banerjee
Deputy General Manager (Project-Gas)
Indian Oil Corporation Ltd.

"Very comprehensive and effective training for better understanding."

Debasish Chattopadhyay
Deputy Manager – Asset Integrity
Gujarat Gas Co. Ltd.

"Comprehensive training for material selection, design, construction, testing, operations and maintenance."

Bimaf N. Gyastelwafa
Deputy Manager
Gugarat Gas Co. Ltd.

"Course material is very good and very much focused."

Gurinder S. Matharu
General Manager Quality Assurance and Compliance
Cairn India Ltd.

"The clarity of thought that has gone into the making of the ASME course is exceptional and the tutor brings this forth in a thorough manner."

K. K. Vaze, Head
Reactor Structures Section
Bhabha Atomic Research Centre

"The course clarified some of the important technical basics."

Makarand R. Deshpande
Design Support Manager
Lloyds Register Asia

"Excellent course module for inspection engineers for the petroleum industry."

Anirban Bhagawati
Superintending Engineer (Maintenance) LPG
Oil India Limited

"Overall an excellent programme of great value to practising engineers, managers and academic professionals."

D. V. Shastry
Deputy General Manager – Training
GAIL Training Institute

Notes

Customized training delivered to your company's site, anywhere in the world.

ASME Corporate Training Programs

ASME Corporate Training Programs delivers training in a variety of learning formats, specifically designed to meet corporate training and development needs.

In-Company group training held on-site at an organization's location — locally or anywhere around the world — conveniently and cost-effectively addresses your training issues and challenges.

The ASME Advantage

Comprehensive Course Offerings in Multiple Learning Formats

- Expansive selection offers best practices in mechanical engineering and engineering management
- In-Company Live Training accommodates budgets, schedules and business requirements – and provides CEUs and PDHs

Professional Instruction by Industry Experts

- ASME-approved, eminently qualified faculty
- Most code courses taught by ASME Code Committee members who understand and communicate code or standard relevance and its impact on safety, quality and integrity
- Leadership and management courses delivered by industry-experienced professionals

Unsurpassed Leadership in Curricula Development

- All ASME courses subjected to rigorous peer review to ensure accuracy, comprehensiveness and relevance
- More than 50 years' experience creating, producing and delivering training programs
- ASME recognized as an Authorized Provider of Continuing Education and Training by IACET, complying with the ANSI/IACET Standard

GET MORE INFORMATION

Rohit Nehru
Business Head, ASME Training & Development

ASME INDIA PVT. LTD.
335, Udyog Vihar, Phase-IV
Gurgaon-122 015, Haryana
India

Phone: +91.124.430.8413
Email: NehruR@asme.org

go.asme.org/indiatraining

ASME Worldwide Offices

Headquarters

Two Park Avenue
New York, NY 10016-5990 U.S.A.
+1.212.591.7000
Fax: +1.212.591.7143
http://www.asme.org

Customer Care

P.O. Box 2300
Fairfield, NJ 07007-2300 U.S.A
1.800.843.2763 (U.S. and Canada)
001.800.843.2763 (Mexico)
+1.973.882.1170 (Outside North America)
Fax: +1.973.882.1717
Email: customercare@asme.org

Washington Center

1828 L Street, NW Suite 810
Washington, DC 20036-5104 U.S.A.
+1.202.785.3756
Fax: +1.202.429.9417
Email: holguinj@asme.org

International Gas Turbine Institute

6525 The Corners Parkway
Suite 115
Norcross, GA 30092-3349 U.S.A.
+1.404.847.0072
Fax: +1.404.847.0151
Email: igti@asme.org

International Petroleum Technology Institute

11757 Katy Freeway
Suite 865
Houston, TX 77079-1733 U.S.A.
+1.281.493.3491
+1.866.276.3738
Fax: +1.281.493.3493
Email: ipti@asme.org

Europe

Avenue DeTervueren, 300
1150 Brussels
Belgium
+32.2.743.1543
Fax: +32.2.743.1550
Email: dogrum@asme.org

China

Asia Pacific, LLC
Unit 09A, EF Floor
E. Tower/Twin Towers
No. B12
JianGuo MenWai DaJie, Chao Yang District
Beijing, 100022 People's Republic of China
+86.10.5109.6032
Fax: +86.10.5109.6039
Email: zhangq@asme.org

India

ASME India Pvt Ltd.
335, Udyog Vihar, Phase-IV
Gurgaon-122 015, Haryana
India
+91.124.430.8411
Fax: +91.124.430.8207
Email: info-india@asme.org

The ASME Foundation

1828 L Street, NW Suite 810
Washington, DC 20036-5104 U.S.A.
+1.202.785.7393
Fax: +1.202.429.9417
Email: schatzlem@asme.org