



**Training
& Development**
Setting the Standard for Workforce Learning Solutions

NORTH AMERICA **SPRING**

2016

TRAINING COURSES
FOR ENGINEERS AND
TECHNICAL PROFESSIONALS

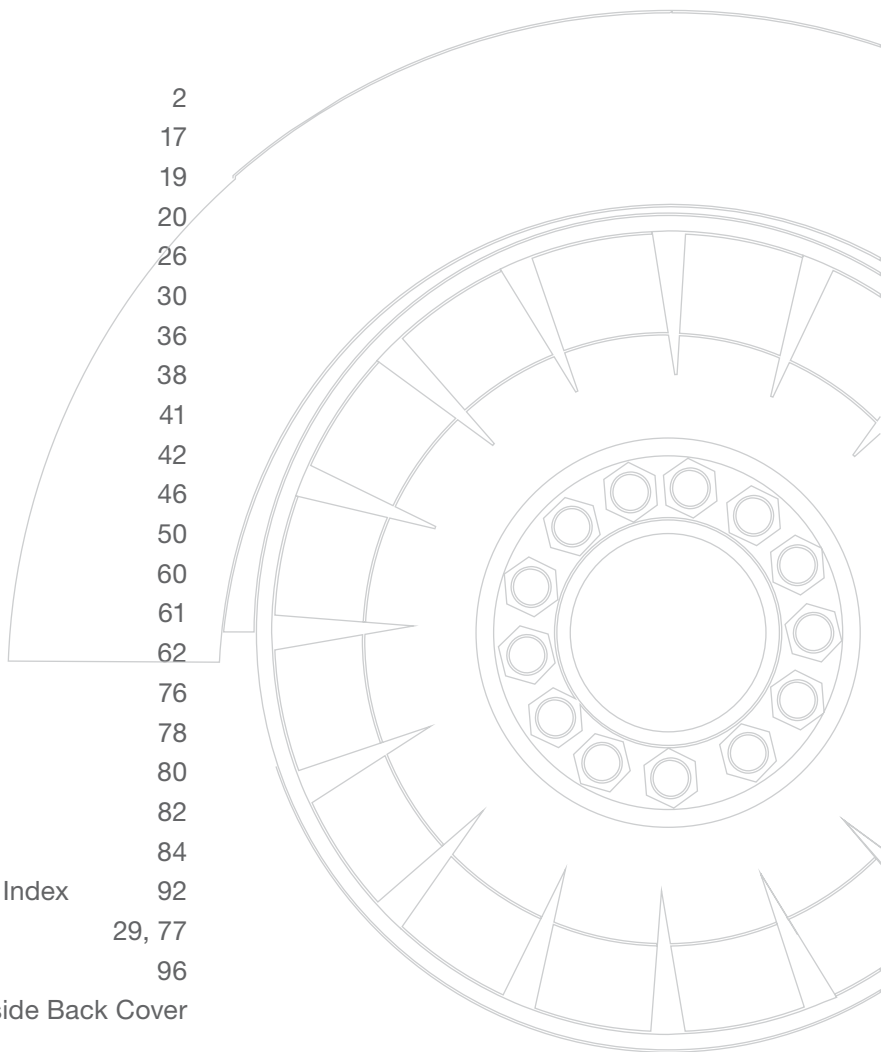


1 (800) 843-2763
go.asme.org/training



CONTENTS

Boilers and Pressure Vessels	2
Bolting	17
Certificate Programs	19
Design and Materials	20
Elevators and Escalators	26
Fluids and Heat Transfer	30
Gas Turbines	36
Geometric Dimensioning and Tolerancing	38
Legal Issues for Engineers	41
Managing People	42
Managing Projects	46
Nuclear	50
Ocean, Offshore and Arctic Engineering	60
Petroleum	61
Piping and Pipelines	62
Process Safety	76
Risk and Reliability	78
Welding	80
ASME eLearning Courses	82
Instructor Profiles	84
ASME Spring 2016 Public Course Calendar and Index	92
ASME In-Company Training Programs	29, 77
Venues and Hotels	96
General Information	Inside Back Cover



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



Special Offer to Non-ASME Members

Attendees of any ASME Training & Development public course registered as non-ASME members will receive a FREE one-year membership to ASME – currently valued at up to \$149 – following completion of an application form which will be sent to non-members after the program.

All ASME members will continue to enjoy special “Member Only” discounts off the List Price on most ASME Training & Development public courses and elearning programs.

ABOUT ASME TRAINING & DEVELOPMENT

ASME appreciates that a company's most valuable asset is its workforce. As a recognized leader in workforce learning solutions for engineers and technical professionals, our goal is to help individuals expand their knowledge and organizations develop their core human assets.

Our guiding principles are reflected in the depth, breadth and quality of highly accessible courses and training programs, specifically developed to boost technical competence and heighten managerial expertise.

All ASME Training & Development programs are delivered by ASME-approved instructors who are recognized experts within their professional disciplines. Importantly, most ASME Standards Courses are developed and taught by ASME Code Committee members who understand and can communicate code or standard relevance and their impact on safety, quality and integrity.

Explore the wide range of learning solutions that will help you handle the demands of today's increasingly challenging environment, presented in training formats that best fit your business needs and meet your budget and time constraints:

- **Public Courses**

Discover a wide range of relevant and practical courses, ranging from fundamental to advanced levels, all led by respected industry experts and delivered in cities across the United States

- **MasterClass Series**

Pursue premium learning programs featuring in-depth exploration of advanced topics aimed at experienced engineers and led by industry experts who address current issues and best practices through interactive group discussion and knowledge sharing

- **eLearning Courses**

Browse our comprehensive portfolio of over 100 different eLearning programs featuring instructor-supported and self-study online learning – each available on the Internet with access anytime, anywhere

- **In-Company Training**

Select from any of our courses to create a customised training program delivered at your company's site or online, anywhere in the world

If you are looking for a topic but don't see it in these pages, please let us know. ASME Training & Development is continually developing new courses to meet constantly changing professional and industry needs.

Statements made by the speaker do not necessarily represent the position of ASME. No recording or videotaping may be conducted by the participants without prior consent from ASME.

ASME does not assume responsibility for any missing or damaged articles for any of its registrants. Registrants are responsible for all personal belongings during the length of the course while in hotel meeting rooms – this includes all breaks, lunch and overnight.

All requests for training records information is processed by the ASME Customer Care department. All records of course enrollment and completion are stored in the ASME database and are available to the student by contacting ASME Customer Care at customercare@asme.org.

Copyright © 2016 ASME American Society of Mechanical Engineers.

All rights reserved, including conversion to other media.



ASME Training & Development is accredited by the International Association for Continuing Education and Training (IACET). ASME Training & Development complies with the ANSI/IACET Standard, which is recognized internationally as a standard of excellence in instructional practices. As a result of this accreditation, ASME Training & Development is authorized to issue the IACET CEU.

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

PD442 ASME STANDARDS COURSE / TOP SELLER

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. Designed primarily for beginners, experienced vessel designers, who would like to update their knowledge of the Code will also benefit from attending.

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

You Will Learn 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

Those involved with the purchase, design, fabrication, or inspection of pressure vessels. Some technical background will be helpful, but attendees are not required to have an engineering degree or previous work experience in the subject matter

Special Requirements

A calculator is required. It is suggested (but not required) that participants bring the latest edition of the ASME codebook, *BPVC Section VIII - Rules for Construction of Pressure Vessels Division 1*.

Instructor Kamran Mokhtarian

3 Days, 2.3 CEUs, 23 PDHs

Member \$2,150 / List Price \$2,250

Save up to \$680 by enrolling in **PD443**; a combo course consisting of this course (**PD442**) and **PD441**, "Inspection, Repairs and Alterations of Pressure Equipment."

Also available as Online Instructor-Supported course EL501.

Inspections, Repairs and Alterations of Pressure Equipment

PD441 ASME STANDARDS COURSE / TOP SELLER

This course is a comprehensive introduction to the requirements of various codes and standards, regarding inspection, repairs and alterations of pressure equipment, and in particular, pressure vessels. The requirements of the National Board Inspection Code and the API-510 will be covered in detail. A brief introduction to API-579, Fitness-for-Service will also be included. Simple flaw evaluation procedures will be evaluated. The activities of ASME's Post Construction Committee will be explained and documents published by this Committee will be discussed.

You Will Learn 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
- Explain how to obtain a National Board stamp
- Identify detailed requirements of the NBIC
- Explain the differences between the NBIC and API-510
- Identify and provide examples of repairs, alterations and the documentation requirements for each
- Describe introductory portions of the ASME post-construction standards
- Provide examples demonstrating the application of the rules

Who Should Attend

Individuals from users, 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.

Instructor Kamran Mokhtarian

2 Days, 1.5 CEUs, 15 PDHs

Member \$1,625 / List Price \$1,725

Save up to \$680 by enrolling in **PD443**, a combo course consisting of this course (**PD441**) and **PD442**, "BPV Code: Section VIII, Division 1: Design and Fabrication of Pressure Vessels."

Also available as Online Instructor-Supported course EL503.

Take This Combo Course and Save Up to \$680

BPV Code, Section VIII, Division 1 Combo Course

PD443 ASME STANDARDS COURSE / TOP SELLER

Created to save participants time and money, this course is a back-to-back offering of "Section VIII, Division 1: Design and Fabrication of Pressure Vessels" (**PD442**) and "Inspection, Repairs, and Alterations of Pressure Equipment" (**PD441**). If you opt to take this combination course, you could **SAVE UP TO \$680**.

Instructor Kamran Mokhtarian **5 Days, 3.8 CEUs, 38 PDHs** **Member** \$3,195 / List Price \$3,295

BPV Code, Section VIII, Division 2: Alternative Rules – Design and Fabrication of Pressure Vessels

PD448 ASME STANDARDS COURSE / TOP SELLER

This course covers the alternative rules for the design and fabrication of pressure vessels in Section VIII, Division 2 of the ASME Boiler & Pressure Vessel Code. It discusses the major topics related to the construction of pressure vessels with the focus on design and analysis.

During the course the background of the rules is explained, enabling participants to understand the reason and the basis for them. As a result of making the rules more exact and refined, the design formulas have become considerably more complicated than most of the older codes. As designers are increasingly dependent on computer programs for detailed vessel design, it is important for a designer to understand the basis of the design rules to be able to apply them properly. While this course cannot cover the details of all methods for stress analysis, it does discuss the guidelines in the Code for various methods and acceptance criteria.

The course also covers the basic materials requirements of the Code as well as the material toughness requirements, which are state-of-the-art. Other topics include the important parts of the fabrication requirements, NDE requirements, PWHT, tolerances, weld details, over-pressure testing, pressure relief equipment, documentation and stamping.

You Will Learn 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

Individuals involved with design, analysis, fabrication, purchasing, repair, and inspection of pressure vessels should attend, as well as supervisory and regulatory personnel. Although some degree of background with design and fabrication of pressure vessels is desirable, no previous experience is required for attending this course. Both the beginners and experienced personnel involved with pressure vessels will benefit from this course.

Instructor Kamran Mokhtarian

4 Days, 3 CEUs, 30 PDHs

Member \$2,675 / List Price \$2,875

Also available as Online Instructor-Supported course EL502.

See pages 92–95 for dates and locations of ASME Public Courses delivered in the USA during Spring 2016.

Pressure Relief Devices: Design, Sizing, Construction, Inspection and Maintenance

PD583 ASME STANDARDS COURSE

Possibly the most important single safety device on a boiler or pressure vessel, the pressure relief device is all that stands between overpressure conditions and catastrophic explosions. This comprehensive review of the design, construction, installation, operation, inspection and maintenance of pressure relieving devices currently in use on boilers and pressure vessels details how to protect pressurized equipment from exceeding the maximum allowable working pressure.

Each participant will receive a copy of the ASME codebook, *PTC - 25 - 2014 Pressure Relief Devices*; and a copy of the book, *Pressure Relief Devices: ASME and API Code Simplified*, by Dr. Mohammad A. Malek.

The code requirements for pressure relief devices are covered by the following ASME Boiler and Pressure Vessel (B&PV) Codes:

- ASME Section I – Power Boilers
- ASME Section III – Nuclear Systems
- ASME Section IV – Heating Boilers
- ASME Section VIII, Div. 1 – Pressure Vessels
- ASME Section XII – Transport Tanks
- ASME B31.1 – Power Piping

In addition, the following American Petroleum Institute (API) standards will be discussed:

- API RP 520-Part I & II Sizing, Selection and Installation of Pressure Relief Devices
- API RP 576-Inspection of Pressure Relief Devices

You Will Learn To

- Explain the Code requirements for pressure relief devices covered by the ASME Boiler and pressure Vessel Code and the ASME Pressure Piping Codes
- Identify the design, construction and manufacturing requirements of pressure relief devices
- Select materials for various types of pressure relief valves, and rupture disks
- Explain how to apply the API RP 520 Part I, Sizing and Selection of Pressure Relieving Devices, API RP 520 Part -2, Installation of Pressure Relief Devices, and API RP 576 - Inspection of Pressure Relief Devices
- Perform calculations for sizing and selection of pressure relief devices for single phase flow of fluids
- Explain how to handle transportation, storage, installation, and maintenance
- Identify the requirements for testing and testing facilities
- Explain how to perform inspections as per the National Board Inspection Code (NBIC) and API standards
- Describe how to establish a National Board VR (valve repair) certification program and repair PRVs
- Explain how to test pressure relief valves as required by the code

Who Should Attend

This course has been designed for the engineers of all levels from fresh engineering graduates to experienced engineers. The following personnel should attend the course: mechanical engineers, and design engineers; process engineers, and chemical engineers; reliability engineers, and maintenance engineers; inspectors and testing engineers; supervisors and managers

Instructor Mohammad Malek

3 Days, 2.3 CEUs, 23 PDHs

Member \$2,150 / List Price \$2,250

BPV Code: Plant Equipment Requirements

PD622 ASME STANDARDS COURSE

This 4-day course provides comprehensive instruction on design, fabrication and operation requirements for pressure vessel, boiler, steam generator and associated equipment. The Code provides the owner the option to extend Code rules beyond pressure vessel boundary limits to attached mechanical equipment. The list includes pressurized components as well as welded and bolted flange connections.

The course focuses attention on a wide range of topics, including design, material and manufacturing responsibilities for Code compliance, circulation in and design of boiler evaporator, superheater, economizer, heat balance in waste heat recovery steam generator, furnace chamber design and boiler safety attachments, boiler tube toughness, corrosion resistance, affinity laws, performance curves, efficiency, proportional flow and safety valve control mechanism, bolted flange pre-load, joint behavior, leakage, welded joint pre- and post-weld heat treatment, distortion, cracking, NDE (nondestructive examination) test requirements, as well as over-pressure and over-speed tests.

You Will Learn To

- Design procedures for components for structural integrity, superior efficiency and reduced exhaust pollution
- Explain hydraulic, thermal and fluid theories
- Gauge severity of operating loads, and mitigate unwelcome failures due to pressure surge, cavitation, water hammer and other rapid energy transfer mechanisms

Who Should Attend

Individuals responsible for design, purchase, manufacture, inspection and sales of plant equipment. Some technical background will be helpful, but an engineering degree or work experience is not needed.

Special Requirement

It is **recommended** that participants bring a laptop to the course.

Instructor Abdulla Rangwala

4 Days, 3 CEUs, 30 PDHs

Member \$2,675 / List Price \$2,875

BPV Code, Section I: Power Boilers

PD665 ASME STANDARDS COURSE

ASME codes and standards are the most widely used in the world for the design, operation, maintenance and repair of power boilers, pressure vessels and nuclear facilities.

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

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

Participants will receive the most recent edition of the *B&PVC Section I: Rules for Construction of Power Boilers*.

You Will Learn To

- Describe the purpose of the Sections of the ASME Boiler & 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

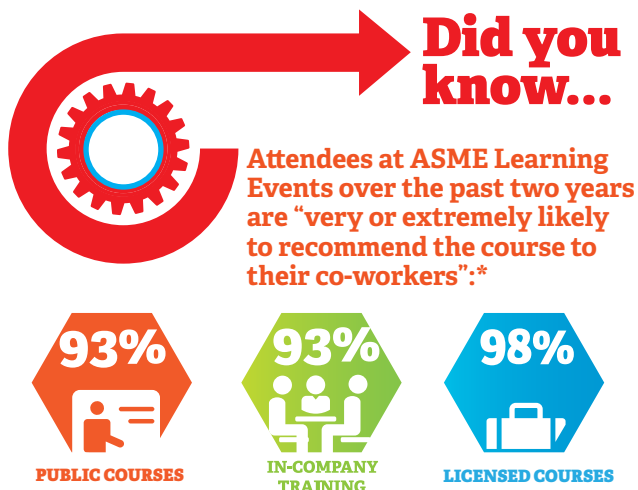
Who Should Attend

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

Instructor Bill Lowry

5 Days, 3.8 CEUs, 38 PDHs

Member \$3,195 / List Price \$3,295



* ASME Course Evaluation Survey completed between July 2012 and June 2014 by 6,108 participants

How to Predict Thermal-Hydraulic Loads on Pressure Vessels and Piping

PD382

When a vessel, pipe or other component fails in a fluid transport or storage system, a thermal-hydraulic load probably exceeded design limits. Excessive pressure change, fluid acceleration, water hammer or rapid energy transfer mechanisms are often the cause. Such problems can be avoided if the engineer correctly anticipates the magnitude and time response of the loads that could occur.

This course summarizes numerous thermal-hydraulic loads that can be exerted on vessels, pipes, components and structures. It provides a greater awareness of thermal-hydraulic loads, demonstrates how to use a variety of handout tools for estimating load characteristics while at the same time instilling confidence in making either reasonable bounding estimates or rigorous predictions of loads.

Participants receive a comprehensive course notebook, which includes a “tool-kit” complete with tables, graphs, rules-of-thumb, useful formulations for estimating thermal-hydraulic loads for a range of applications, example problems, exercises plus a reference textbook useful for advanced self-study.

You Will Learn To

- Explain how to anticipate steady and unsteady thermal-hydraulic loading phenomena in the design or modification of vessel, piping and component systems
- Estimate dominant characteristics of thermal-hydraulic forces
- Describe how to avoid or mitigate unwanted forces by selecting appropriate design parameters or restructuring a procedure

Who Should Attend

Engineers, technical and project managers as well as engineering instructors wishing to upgrade their understanding of thermal-hydraulic phenomena and associated loads, including individuals whose business or professional interests involve pressure vessels, piping and thermofluid system components, as well as researchers and inventors seeking new ideas to help improve components and processes

Special Requirement

A degree in engineering, engineering science, physics or other scientific discipline is recommended.

Instructor Frederick J. Moody

2 Days, 1.5 CEUs, 15 PDHs

Member \$1,450 / List Price \$1,550

Flow-Induced Vibration with Applications to Failure Analysis

PD146

Problem-solving methodologies are the main focus of this comprehensive course on practical applications of flow and vibration theory. The latest design and analysis tools for the prediction and prevention of vibration in structures exposed to high-energy fluid flow are covered in practical detail.

With a review of flow and vibration theory fundamentals, attendees will discover additional benefits from practical problem-solving activities at the conclusion of each section. Topics such as vortex- and turbulence-induced vibration, galloping, flutter, sonic fatigue and fluid-elastic instability will be covered in-depth. Attendees are introduced to state-of-the-art analysis tools for the prediction and prevention of vibration in structures exposed to high-energy fluid flow. Case studies and a workshop create an interactive course that aid engineers at various levels.

Each participant will receive a copy of the book, *Flow-Induced Vibration* (2nd Edition), by Robert Blevins, Ph.D.

You Will Learn To

- Describe vortex-induced vibration, galloping, flutter, sonic fatigue and fluid elastic instability
- Explain the latest vibration theory
- Demonstrate analysis and test techniques in conjunction with strategies for successful design
- Explain how to evaluate examples of heat exchanger vibration, strumming of cables as well as vibration and fatigue of panels

Who Should Attend

Engineers in the design, mechanical, product development, system, R&D, noise, maintenance and diagnostics fields, as well as supervisors and managers responsible for the economic impact of flow-induced component damage

Instructor Robert Blevins

3 Days, 2.3 CEUs, 23 PDHs

Member \$1,895 / List Price \$1,995

See pages 92–95 for dates and locations of ASME Public Courses delivered in the USA during Spring 2016.



Nondestructive Examination – Applying ASME Code Requirements (BPV Code, Section V)

PD389 ASME STANDARDS COURSE

This three-day course is designed for individuals who require an understanding of the principles, techniques and applications of the key Nondestructive Examination (NDE) methods. This program uses PowerPoint to present the principles of Nondestructive Examination enhanced with practical applications that will provide a basic comprehensive knowledge of the major methods.

Emphasis is placed on basic procedures, techniques, applications, advantages and limitations as related to the ASME Boiler & Pressure Vessel Code, Section V for each method. Examples of NDE devices supplement classroom lectures to help participants gain a better understanding of the general theory, uses and variables of the methods presented.

Charles Hellier, the instructor, is also the author of the *Handbook of Nondestructive Evaluation*, 2nd Edition, which will be given to each attendee.

You Will Learn To

- Describe the applications of the basic NDE methods and the various materials to be examined
- Explain the principles, procedures, evaluation, reporting and ASME Code requirements of the basic NDE methods
- Identify the techniques of the visual, penetrant, magnetic particle, radiographic, ultrasonic, and eddy current testing methods

Who Should Attend

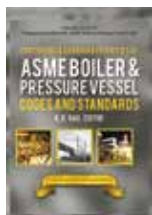
Design, structural, maintenance and materials engineers, and management, supervisors, regulators, auditors and project managers

Instructor Charles J. Hellier

3 Days, 2.3 CEUs, 23 PDHs

Member \$2,150 / List Price \$2,250

ASME Books of Interest



Continuing and Changing Priorities of the ASME Boiler and Pressure Vessel Codes and Standards

K. R. Rao, Editor

800 pp ISBN 9780791860199
Print Book Member \$207 / List Price \$259
Order Number: 860199



Companion Guide to the ASME Boiler and Pressure Vessel and Piping Codes, Fourth Edition-Volumes 1 & 2

K. R. Rao

1,800 pp ISBN 9780791859889
Print Book Member \$479 / List Price \$599
Order Number: 859889

Failure Prevention, Repair & Life Extension of Piping, Vessels and Tanks

PD077 ASME STANDARDS COURSE

Purchasing, fabricating, maintaining and repairing equipment at the lowest possible cost while assuring non-failure are always a priority. The causes of damage and failure of piping, vessels and tanks are described throughout the course as well as how to prevent these incidents. The risk-based inspection planning process and inspection techniques for operating equipment are also reviewed.

Practical case studies and course material are used to illustrate how the ASME Post-Construction and Fitness-for-Service codes should be applied to evaluate inspection results and understand the technical basis and techniques for making run-or-repair decisions to prevent failures of degraded equipment. Participants are taught how to select the cost-effective and technically valid repair options, as well as their implementation (including design of the repair, field construction, examination as well as pressure or leak testing).

Participants will receive the textbook, *Fitness for Service & Integrity of Piping Vessels and Tanks* by George Antaki, and the codebook, *PCC-2 Repair of Pressure Equipment and Piping*.

You Will Learn To

- Detect types and causes of failures
- Identify the differences between design code margins and fitness-for-service margins
- Make run-or-repair fitness-for-service decisions
- Explain the requirements of post-construction codes
- Explain how to make the right decision on equipment life extension
- Analyze financial and technical considerations before you repair or replace equipment
- Review repair options & techniques in accordance with ASME PCC-2

Who Should Attend

Operators, manufacturers, design engineers, maintenance engineers and inspectors involved in repair of alterations of pressure vessels, boilers, piping and tanks

Instructors George Antaki

3 Days, 2.3 CEUs, 23 PDHs

Member \$2,150 / List Price \$2,250

ASME Book of Interest

Global Applications of the ASME Boiler & Pressure Vessel Code

K. R. Rao, Editor

600 pp ISBN 9780791861073
Print Book Member \$207 / List Price \$259
Order Number: 861073

GET MORE INFORMATION AT ASME.ORG

GET MORE INFORMATION AT ASME.ORG

Seismic Design and Retrofit of Equipment and Piping

PD394

Several National Standards and regulations (such as the National Hazard Reduction Program NEHRP by FEMA, the ASME and UBC Codes) have recently introduced explicit requirements for the seismic design or retrofit of critical plant and facility systems and equipment.

This course provides plant owners in earthquake-prone areas who are concerned about reducing public risk and financial loss caused by earthquakes, with ways to implement cost-effective preventive upgrades to essential equipment. It covers the explicit requirements of the latest national standards and regulations, including FEMA's National Hazard Reduction Program (NEHRP), as well as ASME and UBC Codes, for the seismic design or retrofit of critical plant and facility systems and equipment.

Each participant will receive a copy of the *B31E - 2008 Standard for the Seismic Design and Retrofit of Above-Ground Piping Systems* codebook.

You Will Learn To

- Identify requirements for the seismic design or retrofit of critical plant and facility systems and equipment to comply with the latest national codes
- Explain how to evaluate plant piping and equipment to ensure those requirements are met, and practical methods to resolve items which do not meet requirements
- Demonstrate a theoretical and practical understanding of seismic design and analysis and the applicable codes, standards and practices
- Explain how to apply the engineering methods necessary to assess the seismic ruggedness of structure

Who Should Attend

Senior engineers, structural managers and engineers as well as design piping and stress engineers

Special Requirements

Participants should have at minimum a Bachelor's degree in mechanical or civil-structural engineering or the equivalent.

Instructors George Antaki, Michael W. Salmon

4 Days, 3 CEUs, 30 PDHs

Member \$2,295 / List Price \$2,450

API 579-1/ASME FFS-1 Fitness-for-Service

PD395

Fitness-for-service assessment is a multi-disciplinary engineering approach that is used to determine if equipment is fit to continue operation for some desired future period. The equipment may contain flaws, may have sustained damage or may have aged so that it cannot be evaluated by use of the original construction codes.

API 579-1/ASME FFS-1 is a comprehensive consensus industry-recommended practice that can be used to analyze, evaluate and monitor equipment for continued operation. The main types of equipment covered by this standard are pressure vessels, piping and tanks. This course is timely, emphasizing the practical application of a recently updated standard.

This course will help participants understand and apply the API/ASME fitness-for-service standard in their daily work. The material presented in the course shows how the disciplines of stress analysis, materials engineering and nondestructive inspection interact and apply to fitness-for-service assessment. The assessment methods apply to in-service pressure vessels, piping and tanks.

The course includes an extensive set of notes to supplement the contents of the recommended practice, with numerous example problems that illustrate fitness-for-service assessment.

You Will Learn To

- Analyze, evaluate, and monitor pressure vessels, piping, and tanks for continued operation
- Explain how to apply background information on fitness-for-service assessment, especially as it applies to the refining and chemical process industries, which are the primary focus of API 579
- Identify the main parts of the API/ASME standard, as well as the annexes
- Explain the practical application of the techniques incorporated in API 579-1/ASME FFS-1

Who Should Attend

This course is intended for engineers and engineering management engaged in the operation, design, analysis and maintenance of plant facilities

Special Requirements

The participant should have at least a BS degree or equivalent experience in engineering. A general knowledge of stress analysis, materials behavior and fracture mechanics will be helpful.

Instructor Greg W. Brown

3 Days, 2.3 CEUs, 23 PDHs

Member \$1,895 / List Price \$1,995

See pages 92–95 for dates and locations of ASME Public Courses delivered in the USA during Spring 2016.

Bases and Application of Heat Exchanger Mechanical Design Rules in Section VIII of the ASME Boiler and Pressure Vessel Code

MC104 MasterClass Series/ASME STANDARDS COURSE

The rules of Part UHX have parameters and options that can have a significant impact on the design of heat exchangers. This interactive two-day MasterClass offers a thorough insight into the history and bases for the mandatory rules for the mechanical design of shell and tube heat exchangers supplied with the ASME Mark. The program provides a review of the detailed design procedures and a thorough explanation of the significant parameters and available options. Through both presentation and discussion, attendees will gain a greater appreciation and understanding of how these parameters and options can impact their designs.

The class includes detailed example problems that demonstrate, for “real world,” heat exchangers, how the rules are to be applied, and how the options can influence the final design. Examples will be worked in “real time” using Mathcad models of the UHX procedures.

You Will Learn To

- Define the analytical basis of heat exchanger design rules contained in Section VIII of the ASME Boiler and Pressure Vessel Code
- Evaluate the significance of the various parameters used in tubesheet design/tube loading and how they can impact the final heat exchanger design
- Apply the step-by-step design procedure for determining tubesheet stresses on tube loading
- Interpret the significance of the calculated stresses and the importance of stress categories

Who Should Attend

Heat exchanger engineers/designers, developers of heat exchanger design software, as well as managers/supervisors of heat exchanger design activity

Special Requirements

This MasterClass is structured on the assumption that participants have a basic understanding of ASME Boiler & Pressure Vessel Code Section VIII. Participants are encouraged to bring examples of particularly challenging issues encountered on the job for in-class discussion.

2 Days, 1.5 CEUs, 15 PDHs



MASTERCLASS INSTRUCTOR

Gabriel Auriolles, Technology Director for Aspen Technology; Chair, ASME SubGroup on Heat Transfer Equipment. Gabriel is a recognized expert, with over 35 years of experience, in the design of shell and tube heat exchangers and pressure vessels. He is the current Chairman of the ASME SubGroup on Heat Transfer Equipment and a key contributor to the development and testing of Part UHX during a span of 15 years.

Design by Analysis Requirements in ASME Boiler and Pressure Vessel Code Section VIII, Division 2 – Alternative Rules

MC121 MasterClass Series/ASME STANDARDS COURSE

This MasterClass provides an understanding of the analytical methods found in Part 5 of Section VIII, Division 2 as well as to convey practical information on how to meet the requirements using Finite Element Analysis (FEA). Discussion on the background of the analysis methods and their application is presented through the ASME Pressure Technology Bulletins, PTB-1-2013 Section VIII - Division 2 Criteria and Commentary and PTB-3-2013 Section VIII - Division 2 Example Problem Manual. Attendees will gain an appreciation and understanding of how these analytical techniques can be applied to practical design situations. The class includes detailed example problems that demonstrate how the analytical techniques are to be applied, and their limitations. Detailed FEA models are presented to help illustrate the various analytical techniques.

You Will Learn To

- Define the basis and application of the design by analysis techniques to ensure proper vessel design
- Apply the design by analysis techniques to the evaluation of in-service components through the Life-Cycle Management
- Process and the relationship to API 579-1/ASME FFS-1 Level 3 Assessments
- Evaluate the basis of design by analysis techniques and how they compare with other International Pressure Vessel Codes, EN 13445 and PD 5500

Who Should Attend

Pressure vessels engineers working for owner-users, manufacturers or engineering and design construction firms in the refining, petrochemical and other comparable industries that desire a practical understanding of one of the major areas of the new Division 2 of ASME Boiler and Pressure Vessel Code Section VIII

Special Requirements

Attendees will be sent material via email, which they must review prior to the course. Attendees are encouraged to discuss actual scenarios encountered as part of a class discussion.

This MasterClass is structured on the assumption that participants have a basic understanding of ASME Boiler & Pressure Vessel Code Section VIII Division 2 and FEA.

2 Days, 1.5 CEUs, 15 PDHs



MASTERCLASS INSTRUCTOR

David Osage, PE, CSQE, CQA, President & CEO of Equity Engineering Group, and Principal Author of ASME BPV Code Section VIII Division 2. David is internationally recognized for his expertise in the design of new equipment and as an industry expert and leader in the development and use of FFS technology. He received a Certificate of Acclamation from ASME for his work on the new ASME B&PV Code, Section VIII Division 2.

Structural Materials and Design for Elevated to High Temperatures

MC112 MasterClass Series/ASME STANDARDS COURSE

This two-day MasterClass provides insight into important aspects of performance of materials and its relation to design and residual life assessments of components.

Presented in two parts, the class will address two main topics: "Structural Materials and Damage in Elevated and High Temperature Applications" on day one, and "Design and Lifetime Assessments of Components Exposed to High Temperatures" on day two.

Materials and material qualities which can be used at higher temperatures is discussed in detail, as well as damage development under creep and fatigue loading (crack initiation and crack propagation). Consideration of high temperature design rules and code related aspects of high temperature design will be discussed with practical examples.

You Will Learn To

- Use high temperature materials data for design (time dependent allowable stresses)
- Identify damage occurring at elevated and high temperatures
- Assess damage evolution under creep, fatigue and its interactions
- Design for high temperature service and creep-fatigue interactions

Who Should Attend

Design engineers, materials engineers, fabrication, installation and construction engineers, consultants and authorities for boiler, piping, turbomachinery and advanced nuclear plants. The course addresses individuals with an intermediate knowledge level on materials and strength of materials being interested in a general understanding of high temperature materials properties and design for high temperature service

Special Requirements

This MasterClass is structured on the assumption that participants have a basic understanding of structural materials, strength of metals and alloys, classification of loads and determination of stresses and stress allowables. Participants are encouraged to bring examples of particularly challenging issues encountered on the job for in-class discussion.

2 Days, 1.5 CEUs, 15 PDHs



MASTERCLASS INSTRUCTOR

Wolfgang Hoffelner, Managing Director, RWH Consulting LLC and Committee Member, ASME Code Section VIII. Wolfgang is a recognized expert and senior lecturer for high temperature materials at the Swiss Federal Institute of Technology (since 1986). He has published a book on Materials for Nuclear Plants and more than 150 papers in scientific and technical books and journals. He is a contributing member to various ASME Code committees, including ASME Section III, Construction of Nuclear Power Plants.

Techniques and Methods Used in API 579-1 / ASME FFS-1 for Advanced Fitness-for-Service (FFS) Assessments

MC113 MasterClass Series/ASME STANDARDS COURSE

This one-day MasterClass is designed to provide practical knowledge and in-depth examination of the Fitness-For-Service (FFS) Assessment Methods in API 579-1/ASME FFS-1.

A review of the FFS assessment levels will be provided along with a discussion on what constitutes a "best-buy;" assessment examples for volumetric damage, crack-like flaws, creep damage; efforts to harmonize API 579-1/ASME FFS-1 with ASME, Section VIII, Division 2, Part 5; a Life Cycle Management overview for fixed equipment; development of volumetric damage assessment methods for general and local metal loss, and pitting; development of crack-like flaw assessment methods including stress intensity factor and reference stress solutions, failure assessment diagram, fracture toughness estimation, residual stresses; and remaining life estimation for high temperature components including an overview of MPC Project Omega.

Insights into the improvements made in FFS technology and what is coming in the API 579-1/ASME FFS-1, 2014 Edition will also be provided.

You Will Learn To

- Define the basis and application of the Assessment Levels permitted by API 579-1/ASME FFS-1.
- Select an Assessment Level given a component with damage
- Apply the FFS techniques to the evaluation of in-service components through the Life-Cycle Management Process and the relationship API 579-1/ASME FFS-1 Level 3 Assessments to the ASME Code, Section VIII, Division 2

Who Should Attend

This course is intended for Owner-User engineers or contractors responsible for the Life Cycle Management of pressure vessels, piping and tanks. Engineers interested in understanding the harmonization of API 579-1/ASME FFS-1 and the ASME Code, Section VIII, Division 2 will also benefit.

Special Requirements

This Master Class is structured on the assumption that participants have a basic understanding of API 579-1/ASME FFS-1 and API 579-2/ASME FFS-2. Participants are encouraged to bring examples of particularly challenging issues encountered on the job for in-class discussion.

1 Day, 0.8 CEUs, 8 PDHs



MASTERCLASS INSTRUCTOR

David Osage, PE, CSQE, CQA, President & CEO of Equity Engineering Group, and Principal Author of ASME BPV Code Section VIII Division 2. David is internationally recognized for his expertise in the design of new equipment and as an industry expert and leader in the development and use of FFS technology. He received a Certificate of Acclamation from ASME for his work on the new ASME B&PV Code, Section VIII Division 2.

Repair Strategies and Considerations for Pressure Vessels and Piping

MC114 MasterClass Series/ASME STANDARDS COURSE

The focus of the one-day Master Class is to provide an overview of the many different documents (codes, standards, industry guidelines) that exist to help equipment owners make sound repairs to pressure equipment.

Guidance for repairs can come from a number of sources:

- Original design codes (typically ASME)
- Post Construction codes (ASME PCC-2, etc.)
- API Standards (API 510, API 570, API 653, API-579, etc.)
- NBIC Standards
- Other state or industry regulations

Knowing when to use these documents and how to use them together can develop a strong toolbox of repair options.

Also presented are proven methods on how to approach repairs and evaluations: understanding the damage mechanism, understanding the loads involved, and managing the risk.

You Will Learn To

- Select repair methods based on the equipment and situation.
- Describe how the different Codes, Standards, and Regulations can be employed to assess damage conditions and make effective repair-or-replace decisions

Who Should Attend

This course is intended for Owner-User engineers or contractors responsible for the Life Cycle Management of pressure vessel, piping and tanks as well as engineers and inspectors responsible for evaluating damage and determining repair strategies

Special Requirements

Prior to the event, attendees will be given the opportunity to submit questions or examples of real-life scenarios they have faced to be discussed with the group.

This Master Class is structured on the assumption that participants have a basic understanding of ASME Design Codes and equipment terminology. Participants are encouraged to bring examples of particularly challenging issues encountered on the job for in-class discussion.

1 Day, 0.8 CEUs, 8 PDHs



MASTERCLASS INSTRUCTOR

J. Ryan Jones, P.E., is Consultant and Director of the Mechanical Engineering Business Unit at The Equity Engineering Group, Inc. He has a depth of experience covering the full project life-cycle including design/procurement activities, construction/commissioning activities, plant maintenance activities, and failure analysis/FFS/decommissioning activities in petrochemical environments. Jones is a member of the ASME Post Construction Code Committee for Repair of Pressure Equipment and Piping (ASME PCC-2).

Fatigue Analysis Requirements in ASME BPV Code Section VIII, Division 2 – Alternative Rules

MC123 MasterClass Series/ASME STANDARDS COURSE

The focus of the one-day MasterClass is to provide an understanding of the fatigue methods found in Part 5 of ASME Section VIII, Division 2 as well as to convey practical information on how to perform analysis including the use of Finite Element Analysis (FEA). Discussion on the background of the analysis methods and their application are presented through the ASME Pressure Technology Bulletins, "PTB-1-2013 Section VIII - Division 2 Criteria and Commentary" and "PTB-3-2013 Section VIII - Division 2 Example Problem Manual."

Attendees gain an appreciation of how these analytical techniques can be applied to practical design situations. The class includes detailed example problems that demonstrate how the analytical techniques are to be applied, and their limitations. The fatigue analysis approaches using smooth bar and welded joint technology using the new structural stress approach are covered in detail, including case histories to highlight the application to common Industry problems. Detailed FEA models will be presented to help illustrate the various analytical techniques.

You Will Learn To

- Explain the fundamentals of fatigue and the implementation of fatigue design methods in ASME Section VIII, Division 2
- Evaluate the technical basis for smooth bar and welded fatigue methodologies
- Apply the fatigue analysis techniques for practical Industry problems

Who Should Attend

Pressure vessels engineers working for owner-users, manufacturers or engineering and design construction firms in the refining, petrochemical and other comparable industries who desire a practical understanding of one of the major areas of the new Division 2 of ASME Boiler and Pressure Vessel Code Section VIII

Special Requirements

This MasterClass is structured on the assumption that participants have a basic understanding of ASME B&PV Code Section VIII, Division 2, and fatigue concepts.

Participants are encouraged to bring examples of particularly challenging issues encountered on the job for in-class discussion.

1 Day, 0.8 CEUs, 8 PDHs



MASTERCLASS INSTRUCTOR

David Osage, PE, CSQE, CQA, President & CEO of Equity Engineering Group, and Principal Author of ASME BPV Code Section VIII Division 2. David is internationally recognized for his expertise in the design of new equipment and as an industry expert and leader in the development and use of FFS technology. He received a Certificate of Acclamation from ASME for his work on the new ASME B&PV Code, Section VIII Division 2.

Inspection Planning Using Risk-Based Methods

MC124 MasterClass Series/ASME STANDARDS COURSE

This two-day MasterClass provides an in-depth examination of the risk analysis principles, guidance, and implementation strategies presented in the ASME Standard PCC-3, Inspection Planning Using Risk-Based Methods. The methods presented, although broadly applicable, have been specifically developed for applications involving fixed pressure-containing equipment and components. The program provides guidance to owners, operators, and designers of pressure-containing equipment for developing and implementing a risk-based inspection program. These guidelines include means for assessing a risk-based inspection program and its plan. The approach emphasizes safe and reliable operation through cost-effective inspection.

This course conveys practical information on how to perform RBI to help manage operating risks. Discussion on the background of the analysis methods and their application are presented through the ASME Standard PCC-3, Inspection Planning Using Risk-Based Methods. The class includes detailed example problems that demonstrate how the analytical techniques are to be applied, and their limitations.

You Will Learn To

- Explain the fundamentals of risk-based inspection and the implementation strategies presented in ASME Standard PCC-3, Inspection Planning Using Risk-Based Methods
- Identify and evaluate damage mechanisms, damage mechanism resources, and failure modes
- Apply risk analysis techniques to reduce uncertainty and identify opportunities for risk reduction

Who Should Attend

Pressure vessels engineers, inspection and reliability personnel working for owner-users, or engineering and design construction firms in the refining, petrochemical and other comparable industries that desire a practical understanding of Risk-Based Inspection (RBI)

Special Requirements

This MasterClass is structured on the assumption that participants have a basic understanding of ASME PCC-3 and risk-based concepts.

Participants are encouraged to discuss actual scenarios encountered as part of a class discussion.

2 Days, 1.5 CEUs, 15 PDHs



MASTERCLASS INSTRUCTOR

Philip Henry, PE, Technical Advisor, Equity Engineering Group, and co-author of the re-write of API 581, Risked-Based Inspection Technology. Philip is currently Chairman of the API Pressure Relieving System Subcommittee's Task Force on STD 520. He is also actively involved in the development of technology for the API Risk-Based Inspection (RBI) methodology and is co-author of the re-write of API 581, Risked-Based Inspection Technology.

Impact Testing and Toughness Requirements for Pressure Vessels; ASME Section VIII, Divisions 1 & 2

MC125 MasterClass Series/ASME STANDARDS COURSE

All pressure vessel designers need to evaluate their vessel designs for toughness considerations, and determine if impact testing or other types of toughness testing is required. The rules of ASME Section VIII, Divisions 1 and 2 may require toughness testing to be performed to demonstrate the suitability of the vessel for service at the designated minimum design metal temperature (MDMT), or may provide several options for exemption from toughness testing under qualifying conditions.

This two-day MasterClass provides an in-depth review of the rules and application of the ASME Section VIII, Divisions 1 & 2 code rules for toughness requirements associated with a pressure vessel design. The rules of Parts UG, UCS, UHA and UNF for determining when toughness testing is required or may be exempted and how to perform toughness testing when it is required. The detailed technical criteria that apply to toughness testing are discussed in depth. Case studies are used to illustrate proper application of the Code rules to specific design situations for various vessel types and materials of construction. This provides participants with a better understanding of how the rules work together in real world applications.

You Will Learn To

- Determine when toughness testing is required, what type(s) of testing are required to be performed, and the applicable acceptance criteria.
- Apply code provisions for exemption from toughness testing for specific materials of construction, governing thicknesses, and minimum design metal temperatures.
- Identify requirements for welding procedure specification qualification with impact testing, and the acceptance criteria to be achieved for acceptance.
- Explain the principles of production impact testing, when it is required, and the applicable conditions for performance and acceptance

Who Should Attend

Fabricators and designers who desire a better understanding of toughness requirements for pressure vessels

Special Requirements

Participants are encouraged to bring examples of toughness applications encountered on the job for in-class discussion.

2 Days, 1.5 CEUs, 15 PDHs



MASTERCLASS INSTRUCTOR

John Swezy, PE, Member of ASME Standards Committee for Pressure Vessels and Chair of the Subgroup on Fabrication and Examination. John has over 35 years of industry experience, and over 20 years in developing and implementing QC programs for design, welded fabrication, repairs, and alterations of pressure equipment. He is a National Board Commissioned Boiler and Pressure Vessel Inspector and recognized for his expertise with the ASME Code rules of Section VIII, Divisions 1 and 2.

Bases and Application of Design Requirements for High Pressure Vessels in Section VIII Division 3 of the ASME Boiler and Pressure Vessel Code **NEW!**

MC127 MasterClass Series/ASME STANDARDS COURSE

This two-day MasterClass provides an overview of the design methodology and philosophy of ASME Section VIII Division 3, Alternative Rules for High Pressure Vessels, which incorporates an overview of the analysis methods used, including the application of FEA, to meet the requirements of the Code.

Examples of practical applications for many of the techniques are discussed to demonstrate the philosophy of the Code criteria. This includes an overview of the problems presented in ASME PTB-5-2013 and the ASME Section VIII Division 3 Example Problem Manual. Detailed scenarios are examined to illustrate how the analytical techniques are applied, and their respective limitations. An overview of key elements of the materials, fabrication sections, along with a review of special construction techniques and an overview of fatigue calculations and life assessment are also included in the discussion.

You Will Learn To

- Identify the probable causes of piping vibration
- Determine if vibration is likely to be excessive
- Recommend methods to correct the problem if the vibration is excessive

Who Should Attend

Engineers, senior designers, maintenance, quality assurance, inspection and manufacturing personnel who work with process piping (e.g., in the chemical, petroleum, plastic processing, pulp and paper fields)

Special Requirements

This Master Class is structured on the assumption that participants have a basic understanding of at least one of the ASME B31 piping codes

Participants are encouraged to bring examples of particularly challenging issues encountered on the job for in-class discussion.

2 Days, 1.5 CEUs, 15 PDHs



MASTERCLASS INSTRUCTOR

Daniel T. Peters, PE, is an internationally recognized expert in the design and analysis of pressure equipment and pressure vessels, specializing in high-pressure equipment. He is currently an Associate with Structural Integrity Associates, Inc. and works in the area of pressure vessel and piping design, analysis, fitness for service and asset management. He is a past Chair of the ASME Pressure Vessel and Piping Division's High Pressure Technology Committee and the Pressure Vessels and Piping Division. He has authored or coauthored several papers in this area.

Developing Effective Bolted Flange Joint Assembly Procedures Using ASME PCC-1 **NEW!**

MC136 MasterClass Series/ASME STANDARDS COURSE

This two-day MasterClass provides an in-depth review of the guidelines contained in ASME PCC-1 that are essential elements in achieving a high level of leak tightness integrity of otherwise properly designed and constructed bolted flange joint assemblies. This information may be used in the development of effective joint assembly procedures for the broad range of sizes and service conditions normally encountered in industry.

This includes an overview of the basic fundamentals of bolted joint assembly, including the recent developments of uniform criteria for training and qualifying bolted joint assembly personnel, alternatives to the traditional (legacy) assembly patterns and load increment steps, and guidance in determining the most optimal assembly bolt stress.

You Will Learn To

- Use the guidelines in ASME PCC-1 to develop effective bolted joint assembly procedures
- Evaluate and apply updated joint assembly patterns/ bolt load increment combinations that are more efficient than the traditional legacy methods
- Determine the most optimal assembly bolt loads considering each aspect of joint integrity
- Use the guidance on troubleshooting to investigate and diagnose flange joint leakage incidents

Who Should Attend

Individuals who have a role in improving the integrity of bolted joints in process facilities, either by developing or reviewing assembly procedures or by troubleshooting leakage incidents. This may include those who work for owner-users, manufacturing, engineering and design firms, as well as contractors who write and/or execute bolting procedures

Special Requirements

This MasterClass is structured on the assumption that participants have a basic understanding of ASME PCC-1.

Participants are encouraged to bring examples of real issues they have experienced or are experiencing for class discussion.

2 Days, 1.5 CEUs, 15 PDHs



MASTERCLASS INSTRUCTOR

Clay D. Rodery, PE, is pressure equipment technical authority with BP, and has over 34 years of experience in the refining, chemicals and upstream engineering functions providing pressure equipment services including design, maintenance, inspection, and development and maintenance of codes, standards and specifications. He is the current chair of the ASME Post Construction Subcommittee on Flange Joint Assembly.

Run-or-Repair Operability Decisions for Pressure Equipment and Piping Systems **NEW!**

MC132 MasterClass Series/ASME STANDARDS COURSE

This two-day MasterClass provides an in-depth review of the rules and application of the ASME, NBIC and API codes and standards in making run-or-repair operability decisions for pressure equipment (tanks, vessels) and piping and tubing systems. The class is based on a series of Case Studies of abnormal and damaged conditions, how to diagnose their cause, how to determine the integrity of the system or component, how to decide whether to keep the system or component in service, and how to repair and prevent recurrence. In making these assessments, we will discuss what guidance is available in ASME B&PV, ASME B31, ASME Post-Construction Codes, API 579, NBIC, and regulations; as well as what is not addressed in codes, standards and regulations, and is therefore at the discretion of the engineer.

You Will Learn To

- Distinguish which parts of run-or-repair operability decisions are addressed in ASME-API-NBIC codes and standards; and which parts are at the discretion of the engineer
- Apply basic run-or-repair principles to diagnose the cause of damage or abnormal condition, and know what simplified and advanced methods and criteria are available for their analysis
- Identify the criteria used for making operability decisions for several types of generic damage mechanisms, including fatigue, pitting, corrosion, cracking, overload, leaks, and component support failures

Who Should Attend

Plant staff engineers, designers, project engineers, maintenance engineers, inspectors, and regulators who desire a practical roadmap for making run-or-repair and operability decisions based on the sound application of ASME codes and standards, regulations, and engineering practice

Special Requirements

This MasterClass is structured on the assumption that participants have a basic knowledge of ASME Pressure Vessel Codes & Standards.

Participants are encouraged to bring examples of particularly challenging issues encountered on the job for in-class discussion.

2 Days, 1.5 CEUs, 15 PDHs



MASTERCLASS INSTRUCTOR

George Antaki, P.E., is a fellow of the ASME, with over 40 years of experience in pressure equipment. He is internationally recognized for his expertise in design, analysis, and fitness-for-service evaluation of pressure equipment and piping systems. He is the chair of ASME B31 Mechanical Design Committee, chair of ASME III Working Group Piping Design, member of the ASME III Subgroup Component Design, and ASME Operation and Maintenance Subgroup Piping.

Creating and Implementing Effective Inspection Plans for Pressure Equipment and High Energy Piping Systems using ASME PCC-3 **NEW!**

MC137 MasterClass Series/ASME STANDARDS COURSE

This one-day MasterClass provides an overview of the methodology and philosophy of ASME PCC-3, Inspection Planning Using Risk-Based Methods, and includes guidance on the development of an effective and technically rigorous inspection plan for boilers, pressure vessels, heat exchangers, piping and piping components, pipelines, and storage vessels.

Examples of practical applications for the steps involved in creating a risk-based inspection plan are discussed to demonstrate the philosophy of the guideline. Detailed scenarios are used to illustrate how the various stages of an analysis are applied, and their respective limitations. An overview of determining the probability of failure and consequence of failure and the selection of level of risk analysis are included in the discussion.

You Will Learn To

- Explain the use of Risk for engineering applications
- Define a comprehensive list of equipment to be covered in an Inspection Program
- Identify plausible failure mechanisms and associated consequence scenarios
- Calculate Probability of Failure, Consequence of Failure, and Risk
- Select proper inspection technologies
- Create inspection schedules
- Develop mitigation strategies

Who Should Attend

Plant engineers, maintenance engineers, and inspectors involved in the inspection and maintenance of piping, pressure vessels, and other critical plant equipment engineers in the refining, petrochemical, and power generation industries

1 Day, 0.8 CEUs, 8 PDHs



MASTERCLASS INSTRUCTOR

John L. Arnold, PE, is the founder of Niantic Bay Engineering, LLC, and is an internationally recognized expert in the assessment of boilers, pressure equipment and high-energy piping. He is a member of the Post Construction Subcommittee on Inspection Planning as well as the Committee on Power Boilers (BPV, I) and is the Chair of the Subgroup on Fabrication and Examination for BPV I.

Master Class Series

ADVANCED TRAINING COURSES FOR ENGINEERS AND TECHNICAL PROFESSIONALS

SPRING 2016

ASME MasterClasses are premium learning programs comprised of advanced topics aimed at experienced professionals. MasterClasses emphasize learning through discussion of real world case studies and practical applications. Recognized experts lead in-depth sessions that address current issues and best practices to inspire interactive discussions and group knowledge-sharing. In these practical, case study-driven training sessions, attendees are provided with an opportunity to discuss real issues as well as strategies and solutions that affect today's workplace.

FEBRUARY 2016 – LAS VEGAS, NV, USA

MasterClass Courses Pressure Technology and Piping at ASME Boiler Code Week

- | | | |
|--------------|---|-----------|
| MC138 | Workshop: Using ASME RAM Standards to Establish a Reliability, Availability, and Maintainability (RAM) Program for Critical Systems and Power Plants* NEW! | 14 Feb |
| MC136 | Developing Effective Bolted Flange Joint Assembly Procedures Using ASME PCC-1* NEW! | 14-15 Feb |
| MC132 | Run-or-Repair Operability Decisions for Pressure Equipment and Piping Systems Using ASME PCC-2* NEW! | 16-17 Feb |
| MC137 | Creating and Implementing Effective Inspection Systems Using ASME PCC-3* NEW! | 18 Feb |
| MC127 | Design Requirements for High Pressure Vessels in ASME Code Section VIII Division 3* NEW! | 18-19 Feb |

MARCH 2016 – COPENHAGEN Pressure Technology and Piping

- | | | |
|--------------|--|-----------|
| MC121 | Design by Analysis Requirements in ASME Boiler and Pressure Vessel Code Section VIII, Division 2 – Alternative Rules* | 14-15 Mar |
| MC113 | Techniques and Methods Used in API 579-1/ASME FFS-1 for Advanced Fitness-For-Service (FFS) Assessments | 16 Mar |
| MC104 | Bases and Application of Heat Exchanger Mechanical Design Rules in Section VIII of the ASME Boiler and Pressure Vessel Code* | 17-18 Mar |
| MC135 | Using ASME Codes to Meet the EU Pressure Equipment Directive (PED)* NEW! | 17-18 Mar |

AND MORE TO BE ANNOUNCED...

MAY 2016 – HOUSTON, TEXAS, USA

MasterClass Courses at 2016 OTC (Offshore Technology Conference)

- | | | |
|--------------|---|-------|
| MC128 | ASME Code Design Requirements for High Pressure High Temperature (HPHT) Well Head Components* NEW! | 1 May |
| MC134 | Deepwater Riser Engineering NEW! | 1 May |

MAY 2016 – ORLANDO, FLORIDA, USA

MasterClass Courses Pressure Technology and Piping at ASME Boiler Code Week

- | | | |
|--------------|--|-----------|
| MC104 | Bases and Application of Heat Exchanger Mechanical Design Rules in Section VIII of the ASME Boiler and Pressure Vessel Code* | 8-9 May |
| MC121 | Design by Analysis Requirements in ASME Boiler and Pressure Vessel Code Section VIII, Division 2 – Alternative Rules* | 10-11 May |
| MC113 | Techniques and Methods Used in API 579-1/ASME FFS-1 for Advanced Fitness-For-Service (FFS) Assessments* | 12-13 May |
| MC111 | Piping Vibration Causes and Remedies – a Practical Approach* | 11-12 May |
| MC117 | Piping Failures – Causes and Prevention* | 13 May |

AND MORE TO BE ANNOUNCED...

JUNE 2016 – MILAN, ITALY

MasterClass Courses Pressure Technology and Piping at ASME Boiler Code Week

- | | | |
|--------------|---|-----------|
| MC121 | Design by Analysis Requirements in ASME Boiler and Pressure Vessel Code Section VIII, Division 2 – Alternative Rules* | 20-21 Jun |
| MC136 | Developing Effective Bolted Flange Joint Assembly Procedures Using PCC-1* | 20-21 Jun |
| MC113 | Techniques and Methods Used in API 579-1/ASME FFS – 1 for Advanced Fitness-For-Service (FFS) Assessments* NEW! | 22 Jun |
| MC135 | Using ASME Codes to Meet the EU Pressure Equipment Directive (PED)* NEW! | 23-24 Jun |

AND MORE TO BE ANNOUNCED...

* ASME STANDARDS COURSE

The American Society of Mechanical Engineers (ASME)

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

TOP SELLER

Online Instructor-Supported Course EL501

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. Designed primarily for beginners, it will also benefit experienced vessel designers who would like to update their knowledge of the Code. Special features include: an overview of code organization, code updates and addenda, as well as expert instruction on how to prepare and submit an inquiry to the Code Committee for Code Interpretation, Code Cases or Code Revision.

You Will Learn To

- Describe the background of the Code
- Apply the code rules to more common design and fabrication situations
- Perform calculations for some of the loadings and situations not addressed by the code
- Prepare design specifications, design reports, data reports and other documentation

22.5 Hours, 2.3 CEUs, 23 PDHs

Member \$595 / List Price \$695

Also available as a 3-day, Public Course: **PD442**, "BPV Code, Section VIII, Division 1: Design and Fabrication of Pressure Vessels" (see page 2)

BPV Code, Section VIII, Division 2: Alternative Rules for Design and Fabrication of Pressure Vessels

Online Instructor-Supported Course EL502

A practical comparison of the new rules with the old of Division 2 and some 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.

You Will Learn To

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

22.5 Hours, 2.3 CEUs, 23 PDHs

Member \$595 / LIST PRICE \$695

Also available as a 4-day, Public Course: **PD448**, "BPV Code, Section VIII, Division 2: Pressure Vessels" (see page 3)



Introduction to ASME Standards and Certification

Online Assessment Based Course ZABC19

This course describes and explains what ASME codes and standards are, the process for creating them, the people who are responsible for creating them and ASME's role in developing and maintaining codes and standards. After taking this course you will be able to define codes, standards and regulations, including how to apply them.

You Will Learn To

- Explain the definitions used in repairs and alterations
- Know roles and responsibilities of the user, repair concern and regulatory body/authorized inspector
- Understand how to obtain and use the National Board "R" Stamp
- Know NBIC, Parts RA, RB, RC, and RD; API 510, Sections 4, 5, 6, and 7
- Understand jurisdictional requirements and selection of contractor
- Plan for scheduled and unscheduled outages

2 PDHs

Price ~~\$195~~

FREE Trial Offer! Visit go.asme.org/ABC for details.

Inspections, Repairs and Alterations of Pressure Equipment

Online Instructor-Supported Course EL503

An introduction to the requirements of various codes and standards regarding inspection, repairs and alterations of pressure equipment and in particular, pressure vessels, this course covers the requirements of the National Board Inspection Code and the API-510. A brief introduction to API-579, Fitness-for-Service, is included, and simple flaw evaluation procedures are evaluated. The activities of ASME's Post Construction Committee (PCC) are explained and documents published by this committee are discussed.

The instructor *recommends* that participants obtain a copy of the *National Board Inspection Code* (which may be purchased directly from the National Board of Boiler and Pressure Vessel Inspectors website: www.nationalboard.org).

You Will Learn To

- Identify and apply definitions used in repairs and alterations
- Describe the roles and responsibilities of the user, repair concern and regulatory body/authorized inspector
- Explain how to obtain and use the National Board "R" Stamp
- Identify the General Requirements of NBIC
- Explain the jurisdictional requirements and selection of contractor
- Explain how to plan for scheduled and unscheduled outages

15 Hours, 1.5 CEUs, 15 PDHs

Member \$395 / LIST PRICE \$495

Also available as a 2-day, Public Course: **PD441**, "Inspection, Repairs and Alterations of Pressure Equipment" (see page 2)

ASME Boiler and Pressure Vessel Certification Process

Online Assessment Based Course ZABC9

This course provides the information you need to know in order to receive a code certification mark stamp for use on non-nuclear boilers and pressure vessels. Covering the process for ASME certification and the requirements for obtaining non-nuclear code stamps, this course outlines the application process, the joint review, demonstration requirements and common deficiencies.

3 PDHs
Price \$295

Essentials: PTC-25 Pressure Relief Devices **NEW!**

Online Assessment Based Course ZABC36

This course covers the fundamentals of the ASME PTC 25 Code for pressure relief devices. It describes the purpose of Performance Test Codes, their general scope, application, and typical use. It also examines the various types of pressure relief devices (PRDs), their characteristics and terminology. Also covered are the various aspects of flow capacity testing including preparation, methods of measurement, and reports; the inservice testing procedures and methods of measurement; and bench testing, for both compressible and incompressible fluids.

2 PDHs
Price \$195

Essentials: BPV Code, Section V: Nondestructive Examination

Online Assessment Based Course ZABC17

In this introduction to the ASME Boiler & Pressure Code, Section V: Nondestructive Examination (NDE), participants learn the various applications of NDE as well as NDE techniques, such as radiographic examination, ultrasonic examination, magnetic particle examination and liquid penetrant examination. NDE tests are conducted to detect and size defects, discontinuities and flaws in materials and weldments during manufacture, fabrication and construction of parts, components and vessels in accordance with the ASME Boiler and Pressure Vessel Code and other ASME Standards; for example, B31.1 for power piping.

3 PDHs
Price \$195

Essentials: BPV Code, Section XII: Rules for the Construction and Continued Service of Transport Tanks

Online Assessment Based Course ZABC10

Explore the origins and development of Section XII, its organization and general layout, the classes of tanks covered by Section XII and design specifics.

2 PDHs
Price \$195

Essentials: BPV Code, Section VIII, Division 3

Online Assessment Based Course ZABC11

Introduces the requirements of Section VIII, Division 3: Alternative Rules for Construction of High Pressure Vessels, and looks at the differences between Section VIII Division 2 and Section VIII Division 3, and how requirements are applied.

2 PDHs
Price \$195

Essentials: BPV Code, Section IV: Rules for Construction of Heating Boilers

Online Assessment Based Course ZABC35

Provides an introduction to the ASME BPV Code, Section IV: Rules for Construction of Heating Boilers and discusses requirements for boilers constructed of wrought materials, cast iron and cast aluminum as well as those for potable water heaters.

3 PDHs
Price \$195

Essentials: CSD-1 Controls and Safety Devices for Automatically Fired Boilers **NEW!**

Online Assessment Based Course ZABC48

This course introduces the ASME CSD-1 Standard covering major hazards in operating automatically fired boilers owing to loss of water (low water), furnace explosions, overpressure and overtemperature. ASME's CSD-1 Standard was created with the view that improved instrumentation, controls and safety devices, proper operating procedures – coupled with a clearer understanding of installation requirements by manufacturers, installers and operators – can greatly reduce the chances of personal injury, property damage and equipment loss from accidents. The information provided is general in nature and participants are reminded to refer to the CSD-1 Standard for specific details.

3 PDHs
Price \$195

For more information, visit:



go.asme.org/eLearning

Bolted Joints and Gasket Behavior

PD539

Although bolted joints comprise a large percentage of all industrial fasteners, their role in the installation and assembly process is poorly understood. This course provides an overview of bolted joint fundamentals, whether gasketed or not, including behavior and troubleshooting. The course also takes a detailed look at the latest developments in gasketed joint assembly, torque factors, bolting patterns, as well as gasket behavior, tightness, selection and specification.

Each participant will receive a copy of the book, *An Introduction to the Design and Behavior of Bolted Joints, 3rd Edition*, by John Bickford.

You Will Learn To

- Calculate the strength and stiffness of bolted joints and establish the tightness of gasketed flanged joints and their suitability for elevated temperature service
- Explain how to recognize bolt failure modes as well as mitigate failure mechanisms and increase the functional life of a joint
- Explain the fundamentals of the PCC-1 Joint Assembly guidelines including the latest bolting patterns and lubricant properties to recommend the appropriate nut factor for applied torque
- Explain how to estimate and evaluate the tightness of gasketed joints based on leakage gasket constants and understand proposed new tightness design rules
- Explain how to assemble circular gasketed joints three times faster than traditional methods
- Describe how to select appropriate bolt and gasket materials

Who Should Attend

Practicing design and manufacturing professionals involved in assembly of electro-mechanical hardware components and engineers and technicians in design and assembly operations. Two years' engineering experience would be beneficial, but is not necessary.

This course is an excellent prerequisite to PD386, "Design of Bolted Flange Joints."

Instructor James Payne

2 Day, 1.5 CEUs, 15 PDHs

Member \$1,450 / List Price \$1,550

Save up to \$1,275 by enrolling in **PD601**, a triple combination course consisting of this course (**PD539**), **PD577** "Bolted Joint Assembly Principles Per PCC-1 - 2013" and **PD386** "Design of Bolted Flange Joints."

Also available as Online Instructor-Supported course EL512 "The Bolted Joint"

Design of Bolted Flange Joints

PD386

Providing a fundamental understanding of the design and behavior of bolted flange joints – essential components for pressure containment – this course covers the latest findings from the Pressure Vessel Research Council on gasketed flange joints. It also outlines new design rules being developed for the ASME codes.

Participants will receive the textbook, *Gaskets and Gasketed Joints*, by John H. Bickford.

You Will Learn To

- Understand the latest ASME requirements and methodology for flange design
- Design and analyze flange joints for pressure and external loads in accordance with the latest ASME Codes and Standards
- Identify parameters that can affect flange leakage
- Describe the fundamentals of flange and gasket behavior

Who Should Attend

Engineers involved in the design, construction or maintenance of pressurized equipment utilizing flanged joints for the petroleum, refining, chemical, power and process industries

Instructor William Koves

1 Day, 0.8 CEUs, 8 PDHs

Member \$795 / List Price \$895

Save up to \$1,275 by enrolling in **PD601**, a triple combination course consisting of this course (**PD386**), **PD539** "Bolted Joints and Gasket Behavior" and **PD577** "Bolted Joint Assembly Principles Per PCC-1 - 2013."

Take This Combo Course and Save Up to \$1,275!

Bolting Combo Course

PD601

This course is a combination of "Bolted Joints and Gasket Behavior" (**PD539**), "Design of Bolted Flange Joints" (**PD386**) and "Bolted Joint Assembly Principles Per PCC-1-2013" (**PD577**). Take these courses as a combo and **SAVE UP TO \$1,275**.

Two years of engineering experience would be beneficial, but is not necessary.

Instructors David Lay, William Koves, James Payne **5 Days, 3.8 CEUs, 38 PDHs** **Member** \$2,775 / List Price \$2,895

Bolted Joint Assembly Principles Per PCC-1-2013

PD577 ASME STANDARDS COURSE / TOP SELLER

Although the mechanical principles that make a screw or bolt work are elementary – the inclined plane and the lever – the proper application of those simple machine principles to seal a vertical joint or sustain a tower crane under stress, is extremely complex. For many years, there has been recognition of the need to train, test, and certify craftsmen prior to allowing them to work on significant industrial applications that may have safety and structural integrity issues. This course will train and test bolting personnel at the supervisory level on the technological and practical problems of assembling bolted joints in large-scale industrial applications.

Participants will enjoy interactive instruction, a student manual with resource materials, (which includes a 1-year subscription to the most comprehensive on-line bolting library on the web), in-class demonstrations, and a half-day of practical application, ending in a skills certification. Participants will also receive the *ASME PCC-1 - 2013 Guidelines for Pressure Boundary Bolted Flange Joint Assembly* codebook.

You Will Learn To

- Describe the principles of joint design and reliability
- Explain the “nuts and bolts” of nuts and bolts
- Explain the concept of “load” as a bolting goal
- Describe ways to accomplish “load” (torqueing and tensioning)
- Identify factors affecting proper “load” and how to compensate for problems
- Identify the proper selection and installation of gaskets
- Become familiar with bolting tools of all types
- Describe the advantages and disadvantages of various bolting methods and where to use them
- Identify assembly procedures (bolting patterns, incremental tightening, etc.)
- Become familiar with work planning and preparation (such as tools, hardware, bolting plan, safety checklists)

Who Should Attend

Practicing design and manufacturing professionals involved in assembly of electro-mechanical hardware components and engineers and technicians in design and assembly operations, as well as engineers involved in the design, construction or maintenance of pressurized equipment utilizing flanged joints for the petroleum, refining, chemical, power and process industries

Instructor David E. Lay

2 Days, 1.5 CEUs, 15 PDHs

Member \$1,625 / List Price \$1,725

Save up to \$1,275 by enrolling in **PD601**, a combination course consisting of this course (**PD577**), **PD539** “Bolted Joints and Gasket Behavior” and **PD386** “Design of Bolted Flange Joints.” (See page 17)

eLEARNING

The Bolted Joint

Online Instructor-Supported Course EL512

Although bolted joints comprise a large percentage of all industrial fasteners, their role in the installation and assembly process is poorly understood. This course provides an overview of bolted joint fundamentals, whether gasketed or not, including behavior and troubleshooting. It takes a detailed look at the latest developments in gasketed joint assembly, torque factors, bolting patterns, and gasket behavior, tightness, selection and specification.

You Will Learn To

- Calculate forces in bolted joints and establish specific torque
- Explain how to increase functional life of a joint and analyze joints and failure mechanisms
- Explain how to reduce fastener-related warranty and rework costs
- Identify failure mechanisms such as pre-load loss, fatigue, and self-loosening; and the means to avoid them

Required Reading

Bickford, John, H. (1997) *An Introduction to Design and Behavior of Bolted Joints, 3rd Edition*. New York: CRC Press; or Bickford, John, H. & Payne, James, R. (2007). *Introduction to the Design and Behavior of Bolted Joints: Non-Gasketed Joints*, 4th Edition, Volume 1. New York: CRC Press

22.5 Hours, 2.3 CEUs, 23 PDHs

Member \$595 / List Price: \$695

Also available as a 2-day Public Course: **PD539**, “Bolted Joints and Gasket Behavior” (see page 17)

For more information, visit:



go.asme.org/eLearning

Bolting Specialist Qualification Program

NEW

Participate in this online and hands-on training program for individuals involved in the assembly, disassembly or quality assurance of bolted joints.

See next page for details.

Bolting Specialist Qualification Program

NEW



This program is designed to train and evaluate a bolter's ability to inspect, assemble, disassemble and tighten bolted joints in an effective and safe manner.

Through online courses and hands-on training, successful candidates will understand and demonstrate the principles and practices of safe bolted joint assembly as outlined in *Appendix A of ASME PCC-1: Guidelines for Pressure Boundary Bolted Flange Joint Assembly*. Successful candidates will show their ability to apply these practices in the assembly of bolted joints safely and effectively.

The program consists of four online modules and a one-day hands-on training session. Candidates who successfully complete the online courses and pass the online final examination – as well as the hands-on instructor's evaluation – will receive the ASME Certificate for the Qualified Bolting Specialist.*

Program Outline

I BOLTING PRINCIPLES AND PROCEDURES:

This training and assessment is designed to improve the bolters knowledge of the principles and procedures involved in bolting. It is delivered in four online courses with multiple-choice reviews:

Part 1 Principles of the Bolted Joint and ASME PCC-1

Part 2 Flanges, Fasteners and Gaskets

Part 3 Putting It Together/Taking It Apart

Part 4 Bolting Safety and Tool Handling

After completing the four online courses and passing each multiple-choice review, candidates will need to submit an application to enroll in the Final Examination. In the application, candidates are required to submit verification of at least 6 months of bolted joint assembly experience. Once this application packet is approved, the candidate will be enrolled in the online Final Examination.

WHO SHOULD ATTEND:

Anyone involved in the assembly, disassembly or quality assurance of bolted joints

II HANDS-ON TOOL DEMONSTRATION AND TESTING:

After passing the online Final Examination, you will be approved to attend the Hands-On Tool Demonstration and Testing.

This part of the program is delivered in a one-day training session where you will review, observe and demonstrate actual tool handling and safety principles. This session covers the practical application of the principles and practices to show that you can safely and effectively operate bolting tools and assemble functioning joints. It is designed to test and improve your skills. This section of the program can only be taken after successful completion of all four online courses and the Final Examination.

Initially, this training will be available at various locations around the USA.

*NOTE: * Individuals who successfully complete this program will be familiar with the general principles and best practices of bolted joint assembly as outlined in the current edition of ASME PCC-1, and shall have demonstrated their knowledge at the level required by Appendix A of the ASME PCC-1 Guidelines. Such individuals will be issued a certificate of completion. By issuing such certificate of completion, ASME does not "approve," "certify," "rate" or "endorse" any activity, imply licensure, registration or government authorization to practice any specific job function or activity or make any determination of an individual's capabilities in applying this general knowledge within a specific work environment or under actual working conditions, and individuals shall not make any representations to the contrary. It remains the sole responsibility of the employer of any individual to determine competency for assigned tasks and work.*

For more information about the program or how to apply, contact: boltingtraining@asme.org

Turbo Machinery Dynamics: Design and Operation

PD432

This course presents a detailed and comprehensive treatment of operation and maintenance of turbo-machinery.

Starting with the fundamentals of thermodynamics and cycle design, the latest trends in development and production of many different types of turbo-machines are covered. In-depth methods to analyze and explore new operation and maintenance procedures, minimize exhaust emissions and maximize structural integrity and operating efficiency are presented.

The ever-increasing quest for electrical and mechanical power, coupled with stricter restrictions on environmental pollutants, require exacting consideration of natural resources. Creative technological solutions are needed to optimize operation and achieve, often times, conflicting goals. This course teaches methods, which explain the wide range of parameters, as well as how to take advantage of the latest technical advances. Emphasis is placed on controlling operating parameters, interpreting and comparing alternatives and obtaining realistic solutions.

Specially prepared notes and the instructor's textbook, *Turbo-Machinery Dynamics: Design and Operation* will be provided to all participants on a computer disk, as well as a bound copy of the course notes. The electronic notes and textbook are linked for instant access and in-depth study from the notes directly to the specific page of the book through electronic bookmarks. Attendees will also receive computer codes with instructions for simulating and analyzing rotating machinery problems, parameter measurement and balancing of rotors.

You Will Learn To

- Describe fuel consumption, power output and exhaust gas emissions
- Explain structural integrity and component life evaluation
- Identify operating loads, component deflections, rotor-to-stator rub
- Explain the process of manufacturing and assembly methods, balancing of rotors
- Explain the test verification of design parameters and fault diagnosis
- Identify failures arising from cyclical loads and thermal distortion
- Identify material requirements and selection

Who Should Attend

Design and development engineers, plant engineers, field service engineers and technical managers with product and/or project responsibility

Special Requirements

Individuals familiar with calculus and personal computers – along with a Bachelor's degree or equivalent work experience—will have sufficient background for this course. It is **recommended** that participants bring a laptop to the course.

Instructor Abdulla S. Rangwala

5 Days, 3.8 CEUs, 38 PDHs

Member \$2,775 / List Price \$2,895

Design, Analysis and Fabrication of Composite Structure, Energy and Machine Applications

PD567

This course provides an in-depth presentation of design, analysis and manufacturing methods for composites, with an emphasis on polymer matrix composites, which are the most widely used.

Industrial applications are now the largest user of composites, outstripping aerospace and sports equipment. There are a vast and an increasing number of applications, including wind turbines, energy storage flywheels, oil and natural gas exploration and production, natural gas and hydrogen vehicle storage tanks, fuel cells, high-speed and precision machinery, robots, coordinate measuring machines, optomechanical systems, semiconductor manufacturing equipment, automobile and truck engines, bodies, brakes and clutches, energy storage flywheels, gas turbine engines, process industries equipment, heat exchangers, data storage equipment, X-ray and other medical diagnostic equipment, prosthetics and orthotics, as well as electronic and optoelectronic packaging.

In addition to outstanding strengths and stiffnesses and low densities, composites offer unique and tailorable physical properties, including thermal conductivities that range from very low to many times that of copper and thermal expansions that can be varied from high to near zero. Electrically conducting and insulating materials are available. Composites and other advanced materials, some with ultra-high thermal conductivities, are now used in thermal management applications, such as motor cover/heat sinks, servers, notebook computers, power modules, plasma displays, printed circuit boards, heat sinks, laser diode, LED and photovoltaic packaging.

Composites include a wide range of polymeric, metallic, ceramic and carbon materials having both high and low-temperature capabilities.

You Will Learn To

- Understand the advantages, disadvantages and properties of the four classes of composites: polymer matrix-, metal matrix-, ceramic matrix- and carbon matrix-
- Explain key reinforcements and matrix materials
- Understand evolutionary advances in thermal management and heat transfer materials
- Understand industrial, commercial and aerospace/defense applications
- Design cost-effective, reliable products while avoiding common pitfalls
- Understand analysis and manufacturing methods, along with applications, nondestructive evaluation, lessons learned and future trends, including nanocomposites

Who Should Attend

Design engineers, analysts, materials engineers and scientists, manufacturing engineers, quality assurance engineers, engineering managers, R&D engineers and scientists as well as product development engineers in the power generation and storage, automotive, aerospace/defense, process industries, heat transfer, high-speed machinery, precision machinery, optomechanical systems, sports equipment, biomedical engineering, medical equipment, including X-ray, computer-aided tomography, magnetic resonance imaging, electronic, laser diode LED and photovoltaic packaging industries

Instructor Carl Zweben

2 Days, 1.5 CEUs, 15 PDHs

Member \$1,450 / List Price \$1,550

TRIZ: The Theory of Inventive Problem Solving

PD513

This course provides a basic introduction to the Inventive Problem Solving Process known as “TRIZ” (Russian acronym for “Theory of Inventive Problem Solving”). TRIZ is a structured, “left-brained” approach to breakthrough innovation through the use of patterns of invention documented in the most inventive of the world’s patents. This analysis demonstrates an overall algorithm, which when followed, allows anyone to provide breakthrough and novel solutions to problems as well as new product and business concepts.

Each participant will receive a complete set of course notes, a copy of the TRIZ 40 Inventive Principles, a copy of all course problems and solutions, and a copy of the book, *The Ideal Result: What It Is and How to Achieve It*, written by the instructor.

You Will Learn To

- Identify patterns of invention and describe how to use breakthrough ideas from parallel universe technology areas
- Explain the basic TRIZ problem solving algorithm and its basic tools including Ideal Final Result, resource identification and use, contradiction resolution, 40 inventive principles and the TRIZ contradiction table
- Explain how to use TRIZ for failure prediction and analysis
- Explain how to use TRIZ for business and organizational problem solving
- Describe TRIZ Lines of Evolution and how to use them for strategic planning, new product development, and forecasting
- Explain how to integrate TRIZ with other enterprise tools and assessments
- Describe how to integrate TRIZ effectively within your organization

Who Should Attend

Engineers, scientists and technical managers focused on breakthrough innovation and problem solving, professionals interested in adding a breakthrough problem-solving tool to problem definition processes such as Six Sigma and DFSS, as well as Innovation managers interested in improving the quality of inventions and intellectual property

Instructor Jack Hipple
3 Days, 2.3 CEUs, 23 PDHs
Member \$1,895 / List Price \$1,995

Fracture Mechanics Approach to Life Predictions

PD268

Providing a practical understanding of fatigue and fracture calculations, this course is intended for engineers who are required to perform such calculations, or who specify or evaluate testing and draft fatigue or fracture portions of design requirements. It covers the latest methodologies such as weight functions and the failure assessment diagram (FAD) approach. Related subjects such as damage tolerance analysis, reliability and risk-based inspection will also be discussed.

Participants receive the textbook, *Fracture Mechanics: Fundamentals and Applications*, by Ted L. Anderson, Ph.D.

You Will Learn To

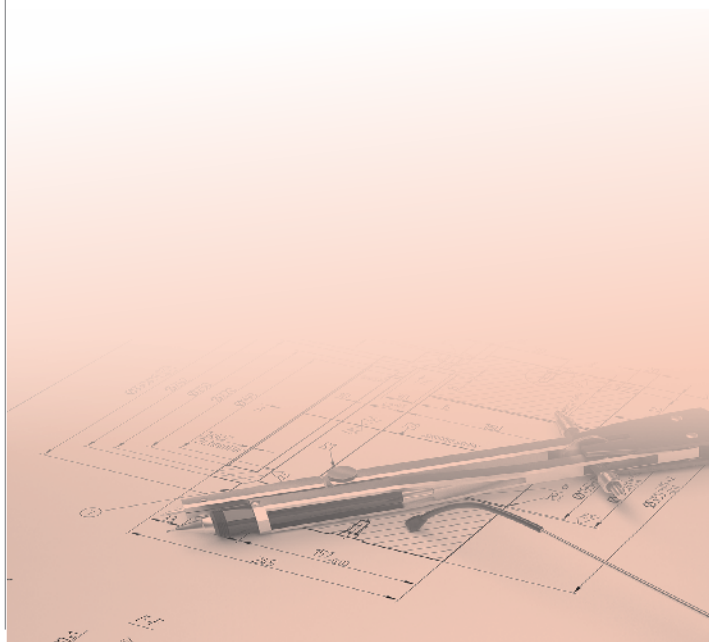
- Explain the underlying assumptions and limitations of fracture mechanics
- Describe the process for material selection for fatigue and fracture resistance
- Explain how to perform simple to moderately complex fracture mechanics calculations
- Identify codified procedures for flaw evaluation

Who Should Attend

Engineers who work with mechanical design, mechanics and structures as well as those involved in testing and equipment fabrication

Instructor Ted Anderson
3 Days, 2.3 CEUs, 23 PDHs
Member \$1,895 / List Price \$1,995

See pages 92–95 for dates and locations of ASME Public Courses delivered in the USA during Spring 2016.



Probabilistic Structural Analysis, Design and Reliability-Risk Assessment

PD683

Reliability, risk and safety assessment are becoming increasingly important in engineering projects. This course provides a broad overview of probabilistic structural analysis, design and reliability/risk/safety assessment, with heavy emphasis on industrial applications. Different methods of analysis are explained with emphasis on assumptions and relative advantages-disadvantages of each method. Use of each method in actual industrial applications is discussed.

This is an applications oriented course; about 75% of the time will be devoted to applications. Actual examples from a spectrum of industries such as aerospace, pressure vessel and piping, nuclear power, fossil power, petrochemical and marine industries will be discussed.

Each participant will receive the course text, *Probabilistic Structural Mechanics Handbook: Theory and Industrial Applications*, (Chapman and Hall). This handbook, edited by the instructor, is the most comprehensive book on the subject available today.

You Will Learn To

- Explain random variations in material properties and loads and how to quantify them
- Compute structural reliability using various techniques
- Design structures to specified reliability/risk level
- Perform probabilistic fracture/fatigue analysis and predict useful life

Who Should Attend

Engineers directly involved in probabilistic structural analysis, design and reliability assessment, as well as engineering supervisors and managers responsible for such projects

No prior knowledge of probabilistic structural analysis or reliability is necessary, but those who have knowledge and experience will also benefit because of the breadth of topics and applications covered, as well as the practical guidance offered.

Instructor C. (Raj) Sundararajan

3 Days, 2.3 CEUs, 23 PDHs

Member \$1,895 / List Price \$1,995

Shock and Vibration Analysis

PD231

In this intermediate level course, engineers with backgrounds in mechanical, structural or related engineering disciplines will learn how to compute natural frequencies and response to dynamic forces, as well as designs to reduce vibration of new and existing systems. Machineries, shafts and rotor systems, rotating equipment, their supports and foundations, vibration absorbers (tuned mass dampers), vibration isolators, shock loads and shock spectra, earthquakes, transportation vibrations, flow-induced vibrations and vibration monitoring are all discussed.

How to benchmark analytical results with test results or field data will also be taught. Emphasis is not on derivation of equations, but rather on assumptions and limitations of various analysis techniques and guidelines on when to use which method.

Thirty-two detailed, step-by-step, worked-out examples of analysis and design are presented at appropriate junctures throughout the course. Five case histories are also presented to demonstrate how the various concepts and methods presented in the course are applied in complex vibration projects.

You Will Learn To

- Compute frequencies of complex equipment, structures and systems
- Compute dynamic response to a variety of operational and environmental forces
- Compute equivalent static loads
- Employ different methods of reducing vibrations of new and existing equipment and structures, including frequency separation techniques, dampening, vibration absorbers, tuned mass dampers as well as vibration isolation
- Perform calculations related to special topics, such as solid-fluid systems and flow-induced vibrations

Who Should Attend

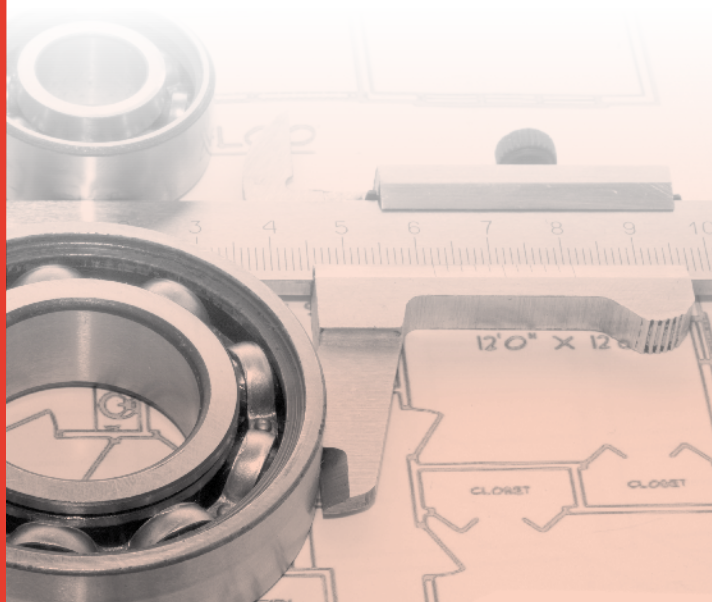
Engineers, engineering supervisors and managers responsible for designing or qualifying mechanical components, equipment, piping and structures subjected to dynamic forces; personnel responsible for auditing, reviewing or approving shock and vibration analysis tasks, including both individuals with a few years experience in vibration analysis as well as those who are new to the area

No prior knowledge of structural dynamics is necessary.

Instructor C. (Raj) Sundararajan

3 Days, 2.3 CEUs, 23 PDHs

Member \$1,895 / List Price \$1,995



Detail Engineering of Piping Systems

PD410

Detail engineering in piping projects consists of the engineering, design, detail and layout of process and utility equipment, piping and instrumentation. This three-day course provides participants with the background required to design, engineer and complete piping assignments.

This course should be of interest to people employed in any area that piping is present (Refinery, Chemical, Power, Pulp and Paper, Utility etc.) The course introduces engineers, designers and construction personnel to the various procedures involved in the development and engineering of Piping and Instrumentation Diagrams (P&ID's), Equipment Plot Plans, Piping Arrangements, and Fabrication Drawings.

Traditionally, there has been little formal training in this area and design decisions often have to be made based on practical considerations without formulae or code reinforcement. Completing piping drawings take up the majority of man-hours in the design of a process plant.

Each participant will receive a copy of the book, *Detail Engineering and Layout of Piping Systems*, by Bob Wilson.

You Will Learn To

- Describe pipe sizing
- Explain pressure drop calculations
- Describe the process of pump and equipment sizing and selection
- Describe the preparation of equipment specifications and drawings
- Identify piping specifications
- Explain the process of instrumentation and process control
- Describe the process of piping component familiarization, including valves and fittings, piping hangers and supports

Who Should Attend

Piping engineering and design personnel; engineers, designers, CAD operators and draftspersons in the piping field; practicing engineers and designers who may have experience in related disciplines and wish to expand their knowledge of the piping area; piping fabricators, contractors and suppliers wishing to understand the relationship of manufacture and fabrication to the design, layout and construction of piping systems

Special Requirements

A series of workshops where attendees have an opportunity to produce a P&ID and a number of Piping Isometrics c/w Bill of Material are part of this course. As a result, attendees are required to bring the following equipment:

- Scale: 3/8" = 1 ft scale
- Circle template
- Calculator
- Drafting pencil and eraser

Instructor Bob Wilson

3 Days, 2.3 CEUs, 23 PDHs

Member \$1,895 / List Price \$1,995

The Taguchi Design of Experiments for Robust Product and Process Designs

PD571

This course will introduce the Taguchi design improvement technique. Attendees will gain hands-on application experience to design robust products and processes as well as solve production problems by reducing performance variations. The goal of this course is to prepare attendees for immediate performance improvement and variation reduction applications. Attendees will leave this course knowing how to plan and lay out experiments, as well as interpret and analyze their results.

Each participant will receive a copy of the textbook, *Design of Experiments Using the Taguchi Approach*, by Ranjit Roy and a working demo of Qualitek-4 software for design and analysis of Taguchi experiments.

You Will Learn To

- Provide an overview of Taguchi concepts
- Measure cost of quality by Loss Function
- Describe the basic concepts in experimental design
- Explain how to project overall evaluation criteria
- Demonstrate a basic analysis and strategy for experimentation
- Describe Combination Design Strategy for Robust Design
- Provide a computation of cost and loss function

Who Should Attend

Product/process design engineers, R&D scientists, project managers, manufacturing managers, senior engineers, Black & Green Belts (Six Sigma) as well as quality and product assurance specialists

Participants are encouraged to attend as a project team.

Special Requirement

Attendees are encouraged to bring their own laptops, although all course materials will be displayed on an LCD projector.

Instructor Ranjit K. Roy

3 Days, 2.3 CEUs, 23 PDHs

Member \$1,895 / List Price \$1,995

See pages 92–95 for dates and locations of ASME Public Courses delivered in the USA during Spring 2016.

eLEARNING

Introduction to Finite Element Analysis (FEA)

TOP SELLER

Online Instructor-Supported Course EL507

Originally developed for aerospace structural analysis, finite element analysis (FEA) is now a convenient and speedy tool for approximation of the solution to a wide variety of complicated engineering problems across a wide range of industries. This online course explains how FEA can produce accurate, reliable approximate solutions, at a small fraction of the cost of more rigorous, closed-form analyses. It also provides the level of knowledge required to successfully use the FEA software packages currently available.

It is estimated that the course will, in total, require approximately 24 hours of work on the part of the student, over the duration of the six-week course.

You Will Learn To

- Provide examples of all the steps necessary to conduct a successful finite element analysis from start to finish
- Explain the concepts underlying the creation of elements which are used to make accurate approximations
- Use finite element software for more advanced structural, thermal analysis and basic modal analysis

22.5 Hours, 2.3 CEUs, 23 PDHs

Member \$595 / List Price \$695

Advanced Finite Element Analysis TOP SELLER

Online Instructor-Supported Course EL508

Based on practical application of Abaqus software, this course builds on the introductory level course to provide a fuller appreciation of how Abaqus works as well as finite element analysis in general. Presented in six modules, the course emphasizes the various aspects of structural analysis. The topics covered can also be abstracted to provide a useful guide for use of FEA for non-structural applications.

You Will Learn To

- Identify command-line input for Abaqus
- Describe structural dynamics, including modal and harmonic response analyses
- Identify Structural Dynamics II, featuring transient dynamic analysis
- Explain nonlinear structural analyses
- Demonstrate design optimization in Abaqus

Prerequisites

Knowledge of basic FEA principles and a familiarity with ANSYS

22.5 Hours, 2.3 CEUs, 23 PDHs

Member \$595 / List Price \$695

Lean Manufacturing

Online Instructor-Supported Course EL525

This course explains how lean manufacturing techniques eliminate waste from typical production processes, and in turn improve product quality.

You Will Learn To

- Explain functional concepts: Value, Waste and Pull
- Describe Value Stream Mapping and Identifying Problems (Waste)
- Explain how to Shorten Production Flow by Eliminating Waste
- Describe the process of Continuous Improvement

15 Hours, 1.5 CEUs, 15 PDHs

Member \$395 / List Price: \$495

Advanced Geometric Dimensioning and Tolerancing (GD&T)-Y14.5 TOP SELLER

Online Instructor-Supported Course EL506

This course explains the basic applications of position, including fixed and floating fastener, zero tolerance, size feature datums and composite vs. two single segments. How to control the size and location of nonsize features are also explained, as are coaxial relationships and control of rectangular features.

You Will Learn To

- Develop an in-depth understanding of GD&T
- Explain basic applications of position and size concepts
- Identify practical tools that you can apply on the job

22.5 Hours, 2.3 CEUs, 23 PDHs

Member \$595 / List Price \$695

FE Review

Online Self-Study Course EL537

This online Fundamentals of Engineering Exam Review (EIT) course contains twelve review modules covering the following topics:

- | | |
|---------------------|------------------------|
| • Thermodynamics | • Fluid Mechanics |
| • Computers | • Statics |
| • Dynamics | • Strength of Material |
| • Mathematics | • Chemistry |
| • Material Science | • Ethics |
| • Electric Circuits | • Economics |

Each module consists of a corresponding quiz that will help you to prepare for the FE (Fundamentals of Engineering) Exam. Participants will be able to download a PDF copy of the FE Review Manual.

10 PDHs

Member \$195 / List Price \$295

Introduction to Geometric Dimensioning and Tolerancing (GD&T)-Y14.5 **TOP SELLER**

Online Instructor-Supported Course EL505

This course covers most of the geometric dimensioning controls used on mechanical engineering drawings. Theoretical and practical concepts of each of the geometric controls are explained relative to design, tooling, production and inspection. Parts of a directional-change gear box are used as platforms for the geometric controls, including shafts, gears, bearings, keys, lip seals, castings and threaded fasteners.

You Will Learn To

- Identify symbols and feature control frame
- Explain the terms, rules and measurement devices
- Describe the characteristics of straightness, flatness, circularity and cylindricity
- Explain how to work with datums, parallelism, perpendicularity and angularity
- Explain runout, profile and position tolerance

Special Requirements

You must have a copy of the ASME Y14.5 *Dimensioning and Tolerancing standard*.

22.5 Hours, 2.3 CEUs, 23 PDHs

Member \$595 / List Price \$695

Introduction to Computational Fluid Dynamics

Online Instructor-Supported Course EL513

This course has six modules and provides detailed explanation of how to set up, run and interpret the results of CFD models for eight different case studies and covers all the necessary theoretical background for industrial applications of computational fluid dynamics. It is estimated that in total, the course will require approximately 24 hours of work on the part of the student, over the duration of the six-week course.

You Will Learn To

- Set up the most appropriate CFD model (in terms of boundary conditions, material properties, solution control parameters, solution monitor, etc.) for the problem in hand
- Set up the most appropriate turbulence model for their particular applications
- Explain how to conduct both Steady state and Transient (time dependent) fluid flow simulations
- Explain how to solve for both isothermal and non-isothermal thermo-fluid applications, by including all the necessary modes of heat transfer (i.e. conduction, convection and radiation) in their CFD model set-up
- Explain how to solve for both Incompressible and Compressible fluid flow applications
- Explain how to solve for fluid flow through porous media and through rotating machinery
- Describe how and extract the required results and plots from the wealth of information available at the solution stage

22.5 Hours, 2.3 CEUs, 23 PDHs

Member \$595 / List price \$695

Drawing Interpretation **TOP SELLER**

Online Instructor-Supported Course EL504

If it is a necessary element of understanding basic mechanical two dimensional engineering drawings, then it is covered in this online course. Topics include basic drawing elements, such as formats, title block, parts list, and revision block; part views, including multi-view, auxiliary, and isometric; section views; general dimensions; tolerances; and finish and welding symbols.

Course materials include a packet with five detail drawings, an assembly drawing for the parts of a trolley wheel, flat and round parts, and a casting. Knowledge of the ASME Y14.5 *Dimensioning and Tolerancing standard* is recommended.

You Will Learn To

- Describe the fundamentals of drawing interpretation
- Identify drawing elements, including part views and sections
- Describe general dimensions and tolerances
- Explain how to represent surface texture, fasteners and welding

22.5 Hours, 2.3 CEUs

Member \$595 / List Price \$695

Developing Products

Online Instructor-Supported Course EL530

This course provides skills and techniques to manage the product planning, design and manufacturing processes. It covers the project life cycle, determining resource requirements, detailed planning and management of the design process.

You Will Learn To

- Explain how product development, projects and company strategy are interdependent
- Describe a process to plan and execute projects
- Coach others in methods of product development
- Describe how to obtain better results through thorough planning and management
- Communicate key objectives and expectations more effectively
- Explain how to solve strategic issues through tactical implementation
- Direct the engineering development process more effectively

22.5 Hours, 2.3 CEUs, 23 PDHs

Member \$595 / List Price: \$695

For more information, visit:



go.asme.org/eLearning

Introduction to the Maintenance and Inspection of Elevators and Escalators

PD100

This course covers the essential design and operation of elevators and escalator systems and addresses the terminology and functions of the various associated mechanical and electrical components.

Each participant will receive a copy of *Elevators 101, Elevator Industry Field Employees' Safety Handbook* and *The ASME A17.4 Guide for Emergency Evacuation of Passengers from Elevators*.

This course is a prerequisite for ASME course, **PD102**, "How to Perform Elevator Inspections Using ASME A17.2" and **PD107**, "Elevator Maintenance Evaluation."

You Will Learn To

- Describe the application of various codes and standards that apply to elevators, escalators and moving walks
- Identify the various types of equipment used in driving means of electric and hydraulic elevators
- Identify hoistway and pit equipment and their functions, including types of suspension means
- Recognize various modes of operations and controls, including automatic, selective collective, car switch, constant pressure and inspection
- Identify machine room components, including location of equipment for machine room-less elevators
- Identify various types of elevators, such as passenger, freight, private residence, special purpose personnel, sidewalk, rooftop, limited use limited application and inclined, as well as dumb waiters and materials lifts
- Identify the classifications of freight elevators
- Identify various types of car and hoistway entrances
- Identify escalator and moving walk components and daily check requirement
- Describe emergency evacuation procedures and fire Emergency Operation

Who Should Attend

Persons with little or no elevator and escalator experience responsible for facilities design, construction management, facilities management as well as inspections and maintenance administration personnel

Instructor Robert Krieger

2 Days, 1.5 CEUs, 15 PDHs

Member \$1,450 / List Price \$1,550

Save up to \$905 by enrolling in PD602 – a combo course consisting of this course (PD100) and PD102, "How to Perform Elevator Inspections Using ASME A17.2."

ASME 17.1 Safety Code and A17.2 Inspection Requirements

PD102 ASME STANDARDS COURSE

This comprehensive course is based on ASME A17.1 /CSA B44 Safety Code for Elevators and Escalators and ASME A17.2 Guide for Inspection of Elevators, Escalators & Moving Walk. It provides a top-to-bottom look at inspection techniques and concepts including how to conduct elevator inspections and tests safely, both for scheduled updates and unexpected problems. It will take you inside the car, through the machine way, by the hoistway, outside the car, and into the pit. The workshop format uses new videotape examples covering both inspectors' manuals and sections on inspection and testing.

Testing and exercises are used to emphasize the requirements and inculcate the requirements. These include measuring and calculating top car clearance, bottom runby and clearances, governor trip setting, overspeed switch settings, safety sliding distance, working pressure and relief valve setting, top and bottom runby, run limit timer, and other adjustments. Safety Integrity Level (SIL) rated devices are introduced and Fire Emergency Operation is covered.

Each participant will receive extensive course notes, a copy of ASME *A17.2 Guide for Inspection of Elevators, Escalators & Moving Walk*; ASME *A17.1 /CSA B44 Safety Code for Elevators and Escalators*; ASME *A17.3 Safety Code for Existing Elevators and Escalators*; *Elevator Industry Inspection Handbook*; and the *Elevator Industry Field Employees' Safety Handbook*.

You Will Learn To

- Record and report results of inspections and tests
- Explain how to determine correct vertical clearances
- Identify acceptable refuge space on the car top and in the pit
- Describe the safety slide and buffer deceleration guidelines
- Identify the procedures to examine hydraulic and electrical equipment
- Explain top and bottom car, counterweight clearances, runby
- Identify working pressure for hydraulic elevators
- Explain governor pull-through and release carrier pull out forces

Who Should Attend

Federal, state, city and private inspectors; technicians, constructors, mechanics, consultants, and service contractors; engineers and architects.

Special Requirements

Participants should bring a copy of *The National Electrical Code* (2005 Edition, or later) as well as a scientific calculator.

Note: Anyone with little or no knowledge of elevators should attend course PD100, "Introduction to Elevators and Escalators," as a prerequisite to this training. *ASME A17.7/ CSA B44.7 Performance Based Safety Code for Elevators and Escalators* will also be discussed.

Instructor Robert Krieger

3 Days, 2.3 CEUs, 23 PDHs

Member \$2,150 / List Price \$2,250

Take This Combo Course and Save Up To \$905!

Elevator and Escalator Combo Course

PD602 TOP SELLER

Created to save participants time and money, this course is a back-to-back offering of "Introduction to the Maintenance and Inspection of Elevators and Escalators" (**PD100**) and "ASME 17.1 Safety Code and A17.2 Inspection Requirements" (**PD102**). By taking this combo course, you could **SAVE UP TO \$905**.

Instructor Robert Krieger

5 Days, 3.8 CEUs, 38 PDHs

Member \$2,775 / List Price \$2,895

Elevator Maintenance Evaluation

PD107

This course addresses both maintenance activities that are normally contracted to an elevator maintenance provider and other activities that are normally performed by the owner/manager. Participants will learn about the Safety Code-required maintenance records including Maintenance Control Programs and how to inspect for and identify common maintenance deficiencies.

Course material includes sample Maintenance Control Programs for electric and hydraulic elevators, as well as escalators and moving walks, which identify all Safety Code-required maintenance activities. The material also includes blank forms for performance evaluations, emergency operation monthly checks and escalator/ moving walk start-up.

Safety is stressed throughout the course, with emphasis on identification and use of elevator safety features that are available for maintenance and inspection personnel. Participants are given exercises and testing after each subject to help assess their understanding of the materials to ensure proper subject comprehension.

Each participant will receive class notes with recommended maintenance practices, copies of the latest edition of *Elevator Industry Field Employees' Safety Handbook*, the *Elevator Maintenance Manual - 2nd Edition* as well as the *Elevator Field Maintenance Handbook*.

You Will Learn To

- Explain how to inspect for and identify common maintenance deficiencies
- Conduct performance measurements, including criteria for both electric and hydraulic elevators
- Complete the daily check and startup of escalators and moving walks
- Identify and evaluate Safety Code-required maintenance records, including a Maintenance Control Program
- Identify what to look for in elevator maintenance contracts, including typical contract clauses
- Describe the safety requirements and procedures for servicing and inspecting elevators
- Explain how to conduct monthly fire emergency operation checks
- Explain how to use and select instruments properly, such as tachometer, light meters, millimeters, pressure gauges, force gauges and accelerometers
- Describe the security of access to elevator equipment, including key control

Who Should Attend

Personnel who evaluate or administer maintenance programs, elevator mechanics, managers and supervisors of elevator maintenance, architects and elevator engineers, as well as building owners/ managers and other individuals who administer elevator maintenance contracts

Special Requirements

This course is structured on the assumption that participants have a basic knowledge of elevator systems. Anyone with little or no knowledge of elevators should attend course **PD100**, "Introduction to Elevators and Escalators," as a prerequisite to this training. (If this is not possible, participants should purchase and review *Elevators 101* prior to attending).

Instructor Robert Krieger

2 Days, 1.5 CEUs, 15 PDHs

Member \$1,450 / List Price \$1,550

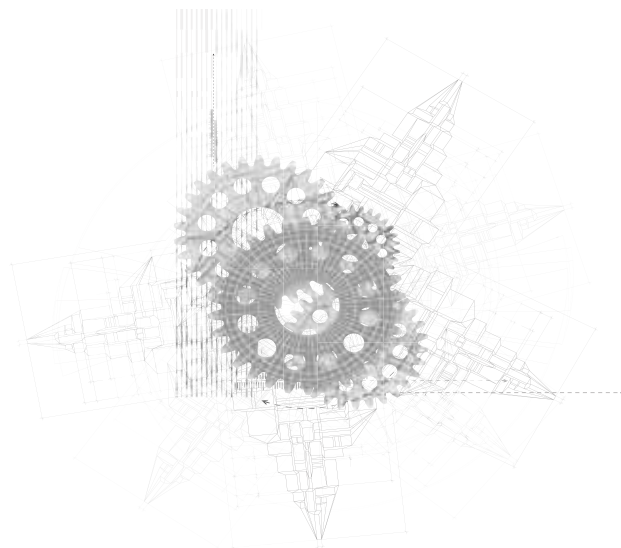
Free ASME Training & Development Spring 2016 eCalendar Now Available

Download the FREE Spring 2016 ASME Training & Development eCalendar listing dates and locations of Live Course offerings in North America, Europe and the Middle East through June 2016, as well as eLearning Courses available worldwide from the Internet any time.

Visit:

go.asme.org/springtraining

or scan with a smart device:



Special Offer to Non-ASME Members

Attendees of any ASME Training & Development public course registered as non-ASME members will receive a FREE one-year membership to ASME – currently valued at up to \$149 – following completion of an application form which will be sent to non-members after the program.

All ASME members will continue to enjoy special "Member Only" discounts off the list price on most ASME Training & Development public courses and elearning programs.

eLEARNING

Essentials: A17.6 Standard for Elevator Suspension, Compensation and Governor Systems

Online Assessment Based Course ZABC28

This course provides an introduction to the A17.6 Standard, covering three specific types of suspension technology for elevators, Stranded Carbon Steel Wire Ropes, Aramid Fiber Ropes and Noncircular Elastomeric Coated Steel Suspension Members.

2 PDHs

Price \$195

Essentials: A18.1 Safety Standard for Platform Lifts & Stairway Chairlifts **NEW!**

Online Assessment Based Course ZABC58

The ASME A18.1 Safety Standard for Platform Lifts and Stairway Chairlifts offers essential guidance to both the public and private sectors to help protect public safety, while reflecting industry best practices.

2 PDHs

Price \$195

Essentials: Rules for Construction of Single-Failure-Proof Cranes and Cranes in ASME NOG-1 and ASME NUM-1 **NEW!**

Online Assessment Based Course ZABC38

This course provides an introduction to the rules for the design and construction of single-failure-proof (SFP) cranes and the cranes covered in ASME NOG-1 and ASME NUM-1 Standards. It covers the scope of the standards, their similarities and differences, and where they are used. It also discusses their application to Type I, Type II, and Type III single-failure proof cranes.

2 PDHs

Price \$195

Essentials – B30 Safety Standard **NEW!**

Online Assessment Based Course ZABC27

This course covers the types of information included within the volumes of the ASME B30 Standard. It describes the Charter of the B30 Committee, the types of load handling equipment to which it applies, its organization and the intended use of the B30 Standard. The course also examines the various scope requirements, definitions of equipment, use of references and general construction characteristics described in B30, while discussing inspection and testing requirements, operation and general maintenance requirements, roles and responsibilities and additional job site safety requirements.

2 PDHs

Price \$195

Guide to Mobile Crane Standards **NEW!**

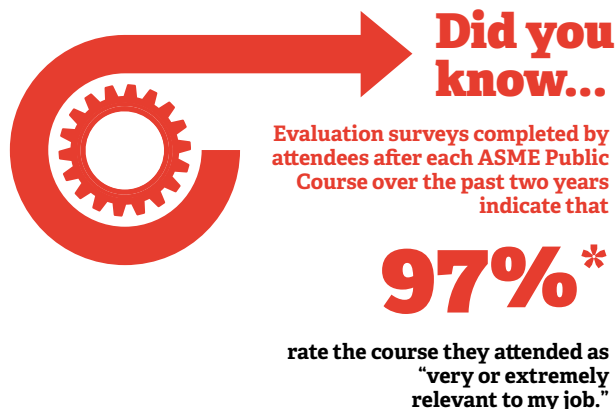
Online Assessment Based Course ZABC54

This course provides information for manufacturers, owners, or users of mobile cranes to help determine which standards should be invoked for a particular application or facility, and covers:

- the various crane requirements invoked by law in the U.S. at the Federal, State, and Local levels
- U.S. and international voluntary consensus standards and other standards and guidelines that are used in the mobile crane industry
- the role various societies and industry groups play in the development of crane standards and guidelines

2 PDHs

Price \$195



* ASME Course Evaluation Survey completed between July 2012 and June 2014 by 4,401 participants

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

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

From In-Company group training held on-site at company's location to eLearning programs that can be accessed online to suit individual employee's schedules, ASME workforce learning solutions conveniently and cost-effectively address your company's training issues and challenges.



Scan with a smart device or
type in any browser:

go.asme.org/corporate1

The American Society of Mechanical Engineers (ASME)



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 and eLearning formats accommodate 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 their 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 Training & Development recognized as an Accredited Provider of Continuing Education and Training by IACET, complying with the ANSI/IACET Standard

Olga Lisica, Manager, In-Company Training, Phone: 1.212.591.7843; Email: lisicao@asme.org or
Paul Francis, Manager, Corporate Development, Phone: +1.973.244.2304; Email: francisp@asme.org

Heating, Ventilating and Air-Conditioning Systems: Sizing and Design

PD027

Through a combination of lectures and workshops, this course demonstrates how to avoid costly errors in the selection and sizing of heating, cooling, and air-moving equipment that can result in excess power and energy expense as well as unnecessary capital investment.

It explains and demonstrates the latest methodology for sizing and selecting heating, ventilating and air-conditioning (HVAC) equipment for commercial buildings; compares and analyzes common types of HVAC systems and currently available energy conserving and recovery equipment; and explores the issue of indoor air quality (IAQ), particularly as it relates to variable air volume (VAV) systems.

Each participant will receive a complimentary copy of the textbook, *Principles of Heating, Ventilating and Air Conditioning*, by H.J. Sauer, Jr., R.H. Howell and W.J. Coad.

You Will Learn To

- Explain how to determine design cooling and heating loads
- Describe the characteristics of various types of HVAC systems
- Evaluate the potential energy-saving techniques and equipment
- Identify potential solutions to IAQ problems with VAV systems

Who Should Attend

Designers, contractors, manufacturers, architects, and engineers who wish to enhance their knowledge of the fundamentals of equipment sizing and energy estimating for heating and air-conditioning systems

Special Requirements

Participants should bring a calculator to each session.

Instructor Ronald Howell

3 Days, 2.3 CEUs, 23 PDHs

Member \$1,895 / List Price \$1,995

Save up to \$440 by enrolling in **PD657** – a combo course consisting of this course (**PD027**) and **PD387** “Understanding Chiller Performance, Operation and Economics.”

Understanding Chiller Performance, Operation and Economics

PD387

Chillers are used to provide chilled water for air-conditioning systems, as well as for many industrial applications. Chillers come in a variety of compressor types: centrifugal, reciprocating, and screw being the major ones. In addition, users often specify multiple chillers for load diversity and therefore the question of series or parallel operation of the chillers has been debated over the years.

Piping systems for chilled water have evolved from primary to secondary to tertiary pumping schemes. Understanding compressor performance, the refrigeration cycle and its components is essential for selecting the right chiller.

It is critical to understand chilled water piping systems and part load chiller performance in order to make the right economic decisions in chiller installation and operation.

You Will Learn To

- Describe refrigeration basics
- Provide general descriptions of chillers
- Identify chiller systems and system auxiliaries
- Describe building operating dynamics
- Explain the economics of chiller systems

Who Should Attend

Engineers, HVAC professionals and operators of commercial buildings

Instructor Ronald H. Howell

1 Day, 0.8 CEU, 8 PDHs

Member \$795 / List Price \$895

Save up to \$440 by enrolling in **PD657** – a combo course consisting of this course (**PD387**) and **PD027** “Heating, Ventilating and Air-Conditioning Systems: Sizing and Design.”

Take This Combo Course and Save Up to \$440!

HVAC Systems and Chiller Performance Combo Course

PD657 TOP SELLER

Created to save students time and money, this is a four-day, combination course, consisting of **PD027** “Heating, Ventilating and Air-Conditioning Systems: Sizing and Design” and **PD387** “Understanding Chiller Performance, Operation and Economics.” If you opt to take these courses as a combination, you could **SAVE UP TO \$440**.

Instructor Ronald Howell **4 Days, 3 CEUs, 30 PDHs** **Member** \$2,295 / List Price \$2,450

Centrifugal Pumps: Testing, Design and Analysis

PD763

Focusing on the hydraulic principles of centrifugal pumps – as well as the interaction between a pump and a pipeline – the course reviews fluid mechanics, modified Bernoulli equation applied to piping systems, energy equation applied to pumps and piping systems, energy loss in a pipeline and in fittings, pump selection process, pump performance measurements, specific speed-efficiency relationship, affinity laws, and effect of pipeline diameter on required pump size and net positive suction head. Participants will learn to use one dimensional flow theory to design an impeller, to design a volute, and to predict how pumps behave in series and in parallel. Also covered is a prediction of critical rotational speed of a pump shaft, shaft stresses, disk stresses, keyway stresses, and more. Each student will receive a copy of *Introduction to Fluid Mechanics, 4th Edition*, by Dr. William S. Janna.

You Will Learn To

- Explain how to measure radial and axial forces on impeller
- Calculate shaft deflection and bearing loads, shaft and key stresses
- Describe approximate head, capacity and efficiency values even before you have made a final pump selection
- Calculate the effects on pump performance of viscous liquids
- Identify the pumps to select for operation in series or parallel

Who Should Attend

This course is tailored to people who have some pump knowledge and are seeking a deeper understanding of how centrifugal pumps work, and when and how to apply this knowledge. This course benefits those who are involved in some facet of pump design or application, or those who are interested in pursuing a career in these areas. You should have a degree in engineering and some work-related experience with pumps or equivalent experience in the pump field.

Special Requirements

Participants are required to bring a calculator, divider and flexible curve to each session.

Instructor William Janna

3 Days, 2.3 CEUs, 23 PDHs

Member \$1,895 / List Price \$1,995

Centrifugal Compressor Performance Analysis

PD584

A practical introduction into performance analysis of centrifugal compressors, this course offers a thorough examination of the thermodynamic processes used to model the compression process along with a description of the design limitations of the various process parameters. Using case studies, the course demonstrates common errors in process data, compressor fouling, off-design operation, and potential re-rates. Participants enter actual process data into a compressor performance program and evaluate the results.

Each participant will receive a hardbound textbook, *Compressor Performance, Aerodynamics for the User*, by M. Theodore Gresh, along with extensive course notes.

You Will Learn To

- Describe the different thermodynamic processes and parameters of head, efficiency and power
- Explain the relationship between the compressor and system curves
- Explain the effect of inlet gas density on compressor performance
- Diagnose fouling and the effect of flow on thrust load
- Measure compressor performance in the field and how to interpret the results

Who Should Attend

Mechanical or chemical engineers with a minimum of 2-3 years of process plant experience

Special Requirements

Participants will need to bring a laptop with MS Excel installed and a scientific calculator for the third day of class.

Instructor Ed Wilcox

3 Days, 2.3 CEUs, 23 PDHs

Member \$1,895 / List Price \$1,995

ASME Books of Interest



Introduction to Finite Element, Boundary Element and Meshless Methods: With Applications to Heat Transfer and Fluid Flow (2014)

**Darrell W. Pepper,
Alain Kassab
and Eduardo Divo**

300 pp
ISBN: 9780791860355
Print Book
Member \$103
List Price \$129
Order Number: 860335



Thermal Power Plant Cooling: Context and Engineering

Carey King, Editor

200 pp
ISBN: 9780791860250
Print Book
Member \$49
List Price \$65
Order Number: 860250



Thermal Management of Telecommunications Equipment

**Lian-Tuu Yeh
and Richard C. Chu**

244 pp
ISBN: 9780791860205
Print Book
Member \$103
List Price \$129
Order Number: 860205

GET MORE INFORMATION AT ASME.ORG

Selection of Pumps and Valves for Optimum System Performance **NEW!**

PD679

This course provides an understanding of the nature of pumps and valves and how they interact for optimum system performance.

The course discusses the requirements necessary for the selection of pumps and valves, and is structured in a sequence, starting from basics to detailed discussion of various aspects of both pumps and valves. It is designed to develop a full understanding of how pumps and valves work, covering selection, installation, operation, maintenance and troubleshooting.

This course covers a broad range of topics, including the flow of fluids (e.g., calculating the flow of fluids and pressure drop), the selection of centrifugal pumps and positive displacement pumps, as well as types of valves, flow characteristics of valves and best practices in installation, operation and maintenance.

During the course attendees will receive guidance in making cost-effective decisions and tips for avoiding poor system operation. Also discussed will be how pumps and valves are used in different industries.

You Will Learn To

- Identify the parameters required for calculating the flow of fluid through pipes
- Identify the requirements for the selection of centrifugal pumps
- Explain how to select the right size pump for the process
- Explain how to select the appropriate capacity and pressure of the pump for an application
- Identify the most cost effective methods to control flow
- Explain how to select the correct valve for a system
- Explain how to reduce equipment costs by proper selection of valves
- Describe how to control costs and avoid system malfunctions due to improper valve selection
- Explain how to install, operate and maintain valves
- Describe the process of diagnosing and troubleshooting valve problems

Who Should Attend

Design engineers, process selection engineers, procurement personnel, project engineers, quality personnel, operation and maintenance engineers as well as inspection engineers

Instructor William S. Janna

4 Days, 3 CEUs, 30 PDHs

Member \$2,295 / List Price \$2,450

Two-Phase Flow and Heat Transfer

PD624

Participants in this course will gain a phenomenological understanding of two-phase flow and heat transfer in engineering processes and components, as well as an ability to compute two-phase flow and heat transfer for common situations. The focus is on single component/two phase systems (e.g., a liquid and its vapor), which is the most common, yet most difficult to model.

The course approaches two-phase flow and heat transfer in a practical way. Advantages and disadvantages of the various models that are being used in purchased programs are explained. Basic quantitative calculation methods will be derived, and their use demonstrated in class exercises on participants' computers. In class demonstration when facilities permit.

Each participant will receive a set of class notes and a copy of the textbook, *Boiling Heat Transfer and Two-Phase Flow (2nd Edition)*, by L.S. Tong and Y.S. Tang.

You Will Learn To

- Explain the fundamentals of boiling
- Explain boiling on external and internal surfaces
- Describe two-phase flow patterns and pressure loss
- Explain two-phase flow with heat transfer
- Identify critical heat flux and burnout
- Describe Flow Instability in two-phase systems
- Identify cavitation
- Describe spray cooling with phase change

Who Should Attend

Engineers working in industrial environments with two-phase systems

Special Requirements

The instructor **recommends** that participants bring their laptop computers to this class.

Instructor Dyer Harris

2 Days, 1.5 CEUs, 15 PDHs

Member \$1,450 / List Price \$1,550

Free ASME Training & Development Spring 2016 eCalendar Now Available

Download the FREE Spring 2016 ASME Training & Development eCalendar listing dates and locations of Live Course offerings in North America, Europe and the Middle East through June 2016, as well as eLearning Courses available worldwide from the Internet any time.

Visit:

go.asme.org/springtraining

or scan with a smart device:



Design and Selection of Heat Exchangers

PD673

This two-day course covers the design, selection and sizing of heat exchangers and begins with a brief review of heat transfer fundamentals. It continues with a look at four main types of heat exchangers that are used in the industry: the Double Pipe Heat Exchanger, the Shell and Tube Heat Exchanger, the Plate and Frame Heat Exchanger and the Cross Flow Heat Exchanger.

The discussion of each of these exchangers includes a description of construction, various methods of analysis and design considerations. The course also includes real-world examples and in-class problems. An appendix of relevant data is also provided as part of the course.

You Will Learn To

- Explain the heat transfer fundamentals needed to analyze heat exchangers
- Explain how to analyze the four types of existing heat exchangers
- Explain how to size exchangers for a given duty
- Describe the advantages and disadvantages of each of the four types of exchangers

Special Requirements

Participants are **required** to bring a scientific calculator and flash drive to the course.

Who Should Attend

Engineers who specify, use or analyze heat exchangers on a regular basis, for those in the process industries that require a broader background in sizing heat exchangers

Special Requirements

The participant should be an engineer or engineering technologist who is familiar with – or wants to become more familiar with – heat exchangers and the methods by which they are analyzed.

Instructor William S. Janna

2 Days, 1.5 CEUs, 15 PDHs

Member \$1,450 / List Price \$1,550

Economics of Pipe Sizing and Pump Selection **NEW!**

PD690

Bad decisions during the piping design and pump selection phases can lead to years of unnecessarily high costs that are wasteful and not recoverable. Therefore, it is worthwhile to make a complete and thorough analysis throughout these processes. Piping should be designed to meet minimum cost requirements and still be adequate for meeting operational requirements.

This course emphasizes using economics to determine the least annual cost associated with the sizing (i.e., diameter) of a pipe. It also includes topics that cover how to determine a system curve to aid in the proper selection of a pump; avoidance of cavitation; and miscellaneous related topics.

The course begins with a brief review of fluid properties including density, viscosity, and pressure. It continues with a definition of volume and mass flow rate, and the principle of conservation of mass. Students also review the ASME, ANSI and ASTM standards that are applied to pipes and copper water tubes along with methods of attaching fittings to pipes and tubes.

Throughout the course, students engage in hands-on exercises to reinforce the learning process. The instructor also allows students, as a group, to select additional topics to review.

You Will Learn To

- Use the principles of fluid mechanics to solve piping system problems
- Analyze piping problems
- Calculate an economical line size
- Explain pump testing procedures
- Determine pump size for a given pipe size
- Explain how to avoid cavitation

Who Should Attend

Engineers who specify, use or analyze piping systems on a regular basis, and who wish to improve their knowledge of pipe specifications, joining methods, fittings, pipe losses, and piping system installations as well as those in the process industries who need a broader background in sizing pumps. This course is intended for participants who have studied fluid mechanics.

Special Requirements

Participants are **required** to bring scientific calculators and flash drives with them to the course.

Instructor William S. Janna

2 Days, 1.5 CEUs, 15 PDHs

Member \$1,450 / List Price \$1,550

See pages 92–95 for dates and locations of ASME Public Courses delivered in the USA during Spring 2016.

Fluid Mechanics, Piping Design, Fluid Transients and Dynamics

PD691

For some, the term water hammer evokes images of broken and bent piping, multi-million dollar damages, the loss of water supplies to cities, and the deaths of individuals due to accidents. Water hammer may be defined as an extreme fluid transient, occasionally recognized by loud banging, or hammering sounds, sometimes associated with fluid transients, which are caused by flow rate changes and resultant pressure surges. Often, *fluid transient* and *water hammer* are used interchangeably.

The primary purpose of this course is to provide practicing engineers with the analytical tools required to identify water hammer concerns and prevent equipment damage, personnel injury, and fatalities. The principles of pipe system design, with respect to fluid mechanics, valves, and pump operations are followed by basic structural piping design principles, water hammer theory, pipe system dynamics, and failure analysis.

Overall, this course integrates multiple engineering disciplines to teach the principles of troubleshooting pipe systems for fluid flow problems and pipe failures.

Each participant will receive a copy of the book, *Fluid Mechanics, Water Hammer, Dynamic Stresses, and Piping Design*, by Robert Leishear, Ph.D.

You Will Learn To

- Explain the fundamentals of fluid mechanics in pipe systems
- Describe the fundamentals of water hammer
- Explain the fundamentals of pipe failures
- Describe the fundamentals of dynamic pipe system response
- Apply corrective actions for pipe failures

Who Should Attend

Practicing engineers in the power and process piping areas who are concerned with the design, performance and safety of piping equipment and components; specifically, the identification, risk assessment and prevention of water hammers in water, liquid and steam piping systems

Special Requirements

Students are **required** to bring calculators to the course. The instructor **recommends** that they bring laptops as well.

Instructor Robert Allan Leishear

4 Days, 3 CEUs, 30 PDHs

Member \$2,295 / List Price \$2,450

Introduction to Hydraulic Systems

PD764

This course introduces hydraulic systems from the basic concepts to the building and operation of these systems. It discusses the terminology of hydraulic components, their construction and principles of operation, and the inefficiencies in system performance. You will also learn about the operation of pumps, motors, valves, cylinders, rotary actuators and accumulators. Other topics include understanding hydraulic schematics and calculating specifications for hydraulic requirements.

You Will Learn To

- Identify the distinguishing features of hydraulic systems
- Recognize hydraulic components by symbols and read schematics based on ISO standards
- Analyze hydraulic circuits from a schematic drawing using animated schematics modeled by Automation Studio
- Explain the operation and applications of pumps, motors, valves, cylinders, rotary actuators and accumulators
- Apply continuity and energy balance equations
- Describe the basic configuration and operation of hydrostatic transmissions

Who Should Attend

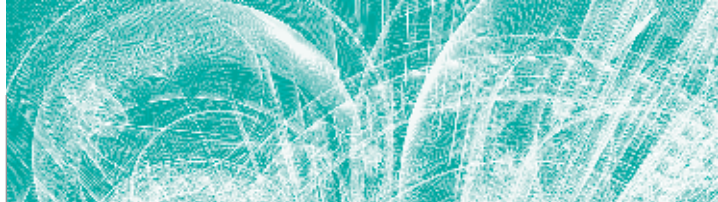
This program is designed for individuals who wish to increase their knowledge of fluid power, including engineers, technical sales personnel, technicians and management personnel

Instructor Medhat Khalil

4 Days, 3 CEUs, 30 PDHs

Member \$2,295 / List Price \$2,450

See pages 92–95 for dates and locations of ASME Public Courses delivered in the USA during Spring 2016.



Two-Phase Flow and Heat Transfer

Online Instructor-Supported Course EL510

This course studies two-phase flow and heat transfer at a practical level, seeking to balance theory and analysis with a phenomenological understanding of the fundamental dynamics. Emphasis is placed on sorting the myriad correlations offered for specific situations, and estimating the effect of a two-phase flow in common processes with simple mathematics.

You Will Learn To

- Explain the fundamentals of boiling
- Explain the process of boiling on external and internal surfaces
- Describe Two-phase flow patterns and pressure loss
- Explain Two-phase flow with heat transfer
- Identify critical heat flux and burnout
- Describe flow instability in Two-phase systems
- Describe conditions for cavitation

22.5 Hours, 2.3 CEUs, 23 PDHs

Member \$595 / List Price \$695

Also available as a 2-day Public Course: PD624, "Two-Phase Flow and Heat Transfer" (see page 32)

Heating, Ventilation and Air-Conditioning (HVAC)

Online Self-Study Course EL538

This course is a review of the basic principles of HVAC, including psychometrics, sensible heating and cooling, dehumidification and humidification, the adiabatic mixing process, air washers, cooling towers, ventilation and infiltration load calculations, control components, refrigeration cycles, heat pumps and refrigeration equipment. The course will test your knowledge with question sets and a final exam.

You Will Learn To

- Describe the properties of moist air
- Explain sensible heating and cooling
- Describe the process of humidification and dehumidification
- Explain the adiabatic mixing process
- Calculate loads for ventilation, infiltration, heating and cooling
- Explain the different types of refrigeration cycles
- Describe the heat pump
- Describe a typical refrigeration system

15 PDHs

Member \$295 / List Price \$395

Introduction to Computational Fluid Dynamics

Online Instructor-Supported Course EL513

This course has six modules and provides detailed explanation of how to set up, run and interpret the results of CFD models for eight different case studies and covers all the necessary theoretical background for industrial applications of computational fluid dynamics. It is estimated that in total, the course will require approximately 24 hours of work on the part of the student, over the duration of the six-week course.

You Will Learn To

- Set up the most appropriate CFD model (in terms of boundary conditions, material properties, solution control parameters, solution monitor, etc.) for the problem in hand
- Set up the most appropriate turbulence model for their particular applications
- Explain how to conduct both Steady state and Transient (time dependent) fluid flow simulations
- Explain how to solve for both isothermal and non-isothermal thermo-fluid applications, by including all the necessary modes of heat transfer (i.e. conduction, convection and radiation) in their CFD model set-up
- Explain how to solve for both Incompressible and Compressible fluid flow applications
- Explain how to solve for fluid flow through porous media and through rotating machinery
- Describe how and extract the required results and plots from the wealth of information available at the solution stage

22.5 Hours, 2.3 CEUs

Member \$595 / List price \$695

Hydraulic Design of Liquid or Water Piping Systems

Online Self-Study Course EL539

This course covers the basic fundamentals and flow equations used for sizing flow lines or solving the line pressure drop of steady-state simple hydraulic systems flowing non-flashing incompressible Newtonian liquids or water. The industry's generally accepted fundamental Darcy's equation and the empirical Hazen-Williams formula for water flows are introduced as the models of calculating the frictional pressure drop.

Also presented are the underlying principles and commonly used one-dimensional Newtonian isothermal incompressible equations for practicing engineers to perform steady-state hydraulic analysis and calculations for the liquid and water piping systems.

You Will Learn To

- Explain the basic principles that govern the fluid flow in pipes
- Perform calculations for various aspects of piping systems
- Describe pressure drop and flow resistance
- Describe the process for pipe selection

Who Should Attend

New practicing engineers or experienced engineers entering a new area of practice or seeking a refresher course in fluid flow or pipe hydraulics

10 PDHs

Member \$295 / List Price \$395

Introduction to the Selection of Pumps **NEW!**

Online Assessment Based Course ZABC42

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, and it takes a close look at centrifugal and positive displacement pumps.

2 PDHs Price \$195

Introduction to the Selection of Valves **NEW!**

Online Assessment Based Course ZABC43

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, including:

- how they operate
- descriptions of the different types of valves
- the advantages and disadvantages of each type of valve
- considerations in selecting the appropriate type of valve for a specific application
- standards and other guidance related to valve selection and use

2 PDHs Price \$195

Hydraulic Design of the Pumping Circuit **NEW!**

Online Assessment Based Course ZABC64

When designing a hydraulic pump delivery circuit, a working knowledge of all of the components and how they operate will help ensure optimum performance, efficiency and safety, and prevent potentially expensive system malfunctions and damage. This course provides information on the effective design and selection of pumping equipment, including:

- accurate use of fluid flow engineering terms employed in the pump trade
- calculating the parameters for specifying a pump
- effective evaluation of options to remove bottlenecks from existing piping infrastructure for new service requirements

2 PDHs Price \$195

ASME MFC-5.3 - 2013 - Using Doppler Ultrasonic Flowmeters **NEW!**

Online Assessment Based Course ZABC65

This course introduces the requirements of ASME MFC-5.3 - 2013, Measurement of Liquid Flow in Closed Conduits Using Doppler Ultrasonic Flowmeters. This course applies only to ultrasonic flowmeters that base their operation on the reflection of acoustic waves off moving scatterers, frequently referred to as a Doppler flowmeter. The flow measurement utilizes either frequency or time domain techniques. It concerns the volume flowrate measurement of a liquid dominant fluid with steady flow or flow varying only slowly with time in a completely filled closed conduit.

2 PDHs Price \$195

GAS TURBINES

The Gas Turbine: Principles and Applications

PD115

The gas turbine is a versatile source of shaft or propulsion power in a growing number of applications.

The course reviews methods for evaluating gas turbines performance, leading to the criteria for selection and application of the engine. Attendees will be instructed in identifying functions of the several components of the gas turbine.

A thorough introduction into quantitative analysis of engine performance based on component characteristics will be provided. The successful operation of gas turbines will be analyzed, including the necessary characteristics of materials and fuels, the control of combustion emissions, along with elements of condition monitoring and maintenance. Specific examples of component and gas turbine engine designs are shown to illustrate the application of the analysis principles.

You Will Learn To

- Explain the methods for evaluating the performance of gas turbines, leading to the criteria for selection and application of the engine
- Identify functions of the several components of the gas turbine
- Conduct a basic quantitative analysis of engine performance based on component characteristics
- Analyze the successful operation of gas turbines, including the necessary characteristics of materials and fuels, the control of combustion emissions along with elements of condition monitoring and maintenance

Who Should Attend

Gas turbine newcomers and more experienced professionals who desire an overview of the many available gas turbine technologies

Special Requirements

Instruction in analysis and performance prediction methods assumes an engineering degree background. Practical design, operating and maintenance considerations are reviewed for the engineer operator and manager.

Instructor John Blanton

2 Days, 1.5 CEUs, 15 PDHs

Member \$1,450 / List Price \$1,550

Also see...

Five-day ASME Public Course, "Turbo-Machinery Dynamics: Design and Operation" PD432 (see page 20)

See pages 92–95 for dates and locations of ASME Public Courses delivered in the USA during Spring 2016.

The Gas Turbines – Controlling Pollutants

PD765

Controlling the emission of pollutants from gas turbine engines – whether they come from aircraft, ground-based energy conversion or mechanical drives – is one of the grand challenges of our time. Design strategies for many gas turbine components, specifically combustors and fuel nozzles, require a thorough understanding of the control of regulated combustion pollutants released into the atmosphere.

This course presents a balanced look at current and future low-emission design strategies for both aircraft and ground-based gas turbine engines. It demonstrates that the formation mechanisms for the regulated pollutants is critical for efficient engineering design strategies and technology development.

The course will cover a wide range of topics, including premixed or partially-premixed combustor designs, staging in lean-premixed prevaporized (LPP) mixture and its consequences on designs of the combustor, prevaporization, combustion efficiency, lean stability, auto-ignition, flashback, fuel nozzles and lean direct injection (LDI).

Operability issues (such as part-load emissions, stability and lean blowout, ignition, thermal managements, pattern factor, combustor pressure losses, combustion oscillations, and alternative fuels) will also be discussed.

Using case studies from manufacturers and technology developers, the class discussion will emphasize the system-level and practical issues that must be addressed in developing different types of gas turbines that emit pollutants at acceptable levels. The course will be especially valuable to those who are new in the field as well as those who wish to increase their understanding of gas turbine emission control strategies.

You Will Learn To

- Describe the requirements for low-emission combustion engines for both aircraft and ground-based
- Explain the fundamental formation mechanisms for particulates, NO_x, and CO in gas turbine engines
- Describe design and control strategies for low-emission engines, including NO_x and CO formation and control
- Explain how to make a smooth and efficient transition from other engine technologies to gas turbine engines and maintenance

Who Should Attend

This course is for design, application, and test engineers, researchers, scientists, and technical managers who are involved in low-emission gas turbine engine technology. Those with both modeling/simulation and experimental orientations will benefit from the course.

Instructor Bruce Chehrudi

3 Days, 2.3 CEUs, 23 PDHs

Member \$1,895 / LIST PRICE \$1,995

eLEARNING

Basic Gas Turbine Engine Technology

Online Self-Study Course EL540

This course will provide a good, general understanding of gas turbines in a user-friendly format that allows the student to proceed at their own pace and schedule. The course is a non-mathematical approach to understanding the fundamental nature of gas turbine engines and the processes that affect their performance.

10 PDHs

Member \$295 / List Price \$395

Basic Gas Turbine Engine Technology **NEW!**

Online Assessment Based Course ZABC49

This course introduces the gas turbine engine, including operation, manufacture and maintenance. It looks at how the technology works and the factors that affect performance.

3 PDHs

Price \$195

Essentials: PTC 6 - Testing Steam Turbines **NEW!**

Online Assessment Based Course ZABC37

This course covers the PTC 6 Standard, which provides procedures for the accurate testing of steam turbines. It is used in conducting acceptance tests of steam turbines and any other situation in which performance levels must be determined with minimum uncertainty.

3 PDHs

Price \$195

Essentials: B133.8 Gas Turbine Installation Sound Emissions **NEW!**

Online Assessment Based Course ZABC44

Sound emissions are a serious concern to the health and welfare of the public. This course provides essential information for the procurement of gas turbine power plants involving acoustical requirements. This Standard addresses this concern within its field of application.

2 PDHs

Price \$195

For more information, visit:



go.asme.org/eLearning

Geometric Dimensioning & Tolerancing Fundamentals 1

PD570 ASME STANDARDS COURSE / TOP SELLER

This geometric tolerancing program is based on the latest ASME Y14.5-2009 standard and will make the GD&T concepts easy to learn and apply.

The training program combines lecture with color animated graphics and video clips to make it the most engaging class possible. The instructor also uses wood and plastic models to simulate parts, gages and inspection equipment. The models are used to demonstrate the physical mating of parts for engineering and design. The sample inspection equipment allows hands-on demonstrations of inspection as well as measurement data reporting practices. After the class lecture is given for a unit, it is followed by a practical student exercise (either individual or group) to test the participants' understanding.

All participants receive a copy of the 380-page *GeoTol Pro Book and Pocket Guide*, by Scott Neumann and Al Neumann, which contain full color graphics and loaded with student exercises.

You Will Learn To

- Demonstrate a thorough understanding of the fundamental geometric concepts
- Interpret and explain the application of geometric symbols on drawings
- Explain how to select the datum reference frames properly
- Calculate the position and profile tolerances

Who Should Attend

Engineers, designers, drafters, CAD, quality, inspection, manufacturing, tooling, production, procurement, purchasing and shop personnel who need to read engineering drawings

Instructor Scott Neumann

2 Days, 1.5 CEUs, 15 PDHs

Member \$1,625 / List Price \$1,725

Save up to \$825 by enrolling in **PD603** - a combo course consisting of this course (**PD570**) and **PD561** "Geometric Tolerancing Applications with Stacks and Analysis."

Geometric Tolerancing Applications and Tolerance Stacks

PD561 TOP SELLER

After taking the introductory GD&T course, students will grasp the fundamentals of GD&T, such as datums, position with MMC and RFS modifiers, parallelism, profile etc. However, they may still lack the intimate knowledge of how to apply geometric tolerancing expertly and perform tolerance stacks to define and optimize their product design. The Applications and Tolerance Stacks course teaches how to apply GD&T and perform tolerance stacks using a series of case study problems including sheet metal, machinings, plastic parts, castings etc. Case studies require students to establish datum reference frames and apply geometric tolerancing based on defined functional requirements. They perform tolerance stacks to ensure design requirements are met. This process links the concept that the proper selection of the datums, as well as position and profile values on individual parts, have a great effect on the accumulation in the overall assembly. The exercises are interactive and discussed in student groups and as a class.

All participants receive a copy of the *GeoTol Applications and Tolerance Stacks* book along with an Excel Tolerance Stack Spreadsheet that will serve as valuable resources long after the training is complete..

You Will Learn To

- Employ the proper interpretation, application and verification using geometric tolerancing on parts and assemblies
- Perform linear, axial and orientation tolerance stacks
- Reallocate tolerances to meet manufacturing capabilities

Who Should Attend

Engineers, designers and drafters, as well as quality, tooling and manufacturing personnel

Special Requirements

Participants should bring calculators to class. Participants may also bring drawings to class for discussion. As a prerequisite, it is recommended that participants attend the Geometric Tolerancing Fundamentals 1 (**PD570**) class or have a strong understanding of geometric tolerancing fundamentals.

Instructor Scott Neumann

2 Days, 1.5 CEUs, 15 PDHs

Member \$1,450 / List Price \$1,550

Save up to \$825 by enrolling in **PD603**, a combo course consisting of this course (**PD561**) and **PD570** "Geometric Dimensioning & Tolerancing Fundamentals 1."

Take This Combo Course and Save Up to \$825!

Geometric Dimensioning & Tolerancing Combo Course

PD603

Created to save participants time and money, this course is a back-to-back offering of "Geometric Dimensioning & Tolerancing Fundamentals 1" (**PD570**) and "Geometric Tolerancing Applications with Stacks and Analysis" (**PD561**). Take these courses as a combo and **SAVE UP TO \$825**.

Special Requirements

Participants should bring calculators to class. Participants may also bring drawings to class for discussion.

Instructor Scott Neumann

4 Days, 3 CEUs, 30 PDHs

Member \$2,295 / List Price \$2,450

Dimensioning and Tolerancing Principles for Gages and Fixtures

PD515

Participants of this course study and apply techniques on the proper design, dimensioning and tolerancing of GO gages, NOGO gages, Functional Gages and Fixtures per the ASME Y14.43-2011 Standard, titled *Dimensioning and Tolerancing Principles for Gages and Fixtures*. Anyone involved in the application or interpretation of dimensioning and tolerancing of products would gain a thorough understanding of these principles through the knowledge of how to gage and fixture them properly, by attending this course.

Taught by the chairman of the Y14.43 Standard, this course is a mixture of lecture, discussion and application working directly with a wide assortment of handout materials and the standard itself, which lays out the rules, guidelines and principles approved by ANSI and the Department of Defense on how to correctly design, dimension and tolerance gages and fixtures.

Each participant will receive a copy of the ASME codebook, *Y14.43 - 2011 Dimensioning and Tolerancing Principles for Gages and Fixtures*.

You Will Learn To

- Apply the rules, principles and practices of gage and fixture design, dimensioning and tolerancing per the Y14.43-2011 standard
- Explain how to extend the principles contained in ASME Y14.5M-1994 and ASME Y14.5M-2009, (which are not gaging standards) to gages and fixtures, so that they can be applied to manufacturing and inspection
- Explain how choices made on design, dimension, and tolerance gages and fixtures determine whether good parts will be rejected and/or bad parts will be accepted
- Correct in-house gage and fixture designs
- Collect and analyze variables data from Coordinate Measurement Machines (and from a variety of inspection equipment)
- Explain how to put into practice the proper simulation of datum features

Who Should Attend

Those with an interest in learning the new rules, regulations and preferred ASME and ANSI practices per the newly released standard, gage designers, fixture designers, manufacturing engineers, process engineers, quality engineers, inspectors as well as anyone wishing to strengthen their knowledge of Geometric Dimensioning and Tolerancing

Special Requirements

Course participants should have a basic knowledge of the Y14.5 Standard in order to optimize their learning experience.

Instructor James D. Keith
3 Days, 2.3 CEUs, 23 PDHs
Member \$1,895 / List Price \$1,995

See pages 92–95 for dates and locations of ASME Public Courses delivered in the USA during Spring 2016.

Mechanical Tolerancing for Six Sigma

PD449

This two-day course teaches participants how to solve assembly stacks using both traditional and Six Sigma methods. We highlight the design risks that are associated with the classical methods of tolerance analysis, and introduce Six Sigma methods that will eliminate these risks.

The goal of the Six Sigma techniques is to teach the participants how to assess the manufacturing and design risk of their tolerances. This risk is quantified in terms of manufacturing defects and assembly defects. These methods are unique because they allow the participants to optimize their designs by making trade-offs between assembly defects and manufacturing defects.

This is a lecture course, with many opportunities for participants to work on problems. We walk the participants through each of the tolerance analysis and allocation methods. After they master each method, we show them an Excel® spreadsheet that automates each method. This course is unique because it teaches participants to apply Six Sigma techniques to predict their design and manufacturing risk before they build parts.

Participants receive an Excel® spreadsheet to automate the tolerance analysis and allocation methods and a participant guide as a hands-on reference.

You Will Learn To

- Create one-dimensional loop diagrams
- Explain the development of assembly requirement equations
- Conduct an analysis of mechanical assembly requirements using Worst Case (WC), Root Sum of the Squares (RSS) and Modified Root Sum of the Squares (MRSS) methods
- Document risks associated with using the WC, RSS and MRSS analysis methods
- Describe the analysis of Geometric Dimensioning & Tolerancing (GD&T) controls in a tolerance analysis
- Describe the allocation of mechanical tolerances based on process capabilities using WC and Six Sigma statistical methods
- Provide estimates of manufacturing piece part defect rates and assembly tolerance defect rates
- Use MechTOLTM Lite spreadsheet to automate tolerance analysis and allocation processes

Who Should Attend

Anyone responsible for putting tolerances on mechanical drawings, including mechanical design engineers, drafting designers, fabrication engineers, assembly engineers and quality engineers

Special Requirements

It is recommended that participants bring a laptop with Excel® software. Additionally, participants must bring a calculator with square and square root functions.

Instructor Paul Drake
2 Days, 1.5 CEUs, 15 PDHs
Member \$1,450 / List Price \$1,550

eLEARNING

Advanced Geometric Dimensioning and Tolerancing (GD&T) **TOP SELLER**

Online Instructor-Supported Course EL506

This advanced course thoroughly covers some of the more commonly used geometric dimensioning controls for mechanical engineering drawings. Basic applications of position are explained in greater detail, including fixed and floating fastener, zero tolerance, size feature datums, and composite versus two single segments. How to control the size and location of non-size features are also explained. Coaxial relationships and control of rectangular features is also covered.

Possession of the *ASME Y14.5 Dimensioning and Tolerancing* standard is required.

You Will Learn To

- Develop an in-depth understanding of GD&T
- Explain basic applications of position and size concepts
- Identify practical tools that you can apply on the job

22.5 Hours, 2.3 CEUs

Member \$595 / List Price \$695

Drawing Interpretation **TOP SELLER**

Online Instructor-Supported Course EL504

If it is a necessary element of understanding basic mechanical two dimensional engineering drawings, then it is covered in this online course. Topics include basic drawing elements, such as formats, title block, parts list, and revision block; part views, including multi-view, auxiliary, and isometric; section views; general dimensions; tolerances; and finish and welding symbols.

Course materials include a packet with five detail drawings, an assembly drawing for the parts of a trolley wheel, flat and round parts, and a casting. Knowledge of the *ASME Y14.5 Dimensioning and Tolerancing* standard is recommended.

You Will Learn To

- Describe the fundamentals of drawing interpretation
- Identify drawing elements, including part views and sections
- Describe general dimensions and tolerances
- Explain how to represent surface texture, fasteners and welding

22.5 Hours, 2.3 CEUs

Member \$595 / List Price \$695

For more information, visit:



go.asme.org/eLearning

Introduction to Geometric Dimensioning and Tolerancing (GD&T) **TOP SELLER**

Online Instructor-Supported Course EL505

Designed for those who use the *ASME Y14.5 Dimensioning and Tolerancing* standard, this course covers most of the geometric dimensioning controls used on mechanical engineering drawings. Theoretical and practical concepts of each of the geometric controls are explained relative to design, tooling, production, and inspection. Parts of a directional-change gear box are used as platforms for the geometric controls, including shafts, gears, bearings, keys, lip seals, castings and threaded fasteners.

You Will Learn To

- Identify symbols and feature control frame
- Explain the terms, rules and measurement devices
- Describe the characteristics of straightness, flatness, circularity and cylindricity
- Explain datums, parallelism, perpendicularity and angularity
- Explain runout, profile and position tolerance

22.5 Hours, 2.3 CEUs

Member \$595 / List Price \$695

Essentials: Y14.8-2009 Castings, Forgings and Molded Parts

Online Instructor-Supported Course ZABC32

This course describes the practices for the preparation of drawings related to castings, forgings and molded parts. It covers drawing preparation, requirements, datum referencing, and notes and items. Understanding these practices will help ensure that your drawings are comprehensible and unambiguous to the reader.

2 PDHs

Price \$195

Essentials: Y14.5-2009 Dimensioning and Tolerancing **NEW!**

Online Instructor-Supported Course ZABC73

This course introduces the contents and guidelines outlined in the *ASME Y14.5 - 2009 Dimensioning and Tolerancing Standard*, which presents acceptable, standardized methods for applying dimensions and tolerances through a language of letters, numbers and special symbols. The course covers the nine sections and five appendices of the *ASME Y14.5 Standard* clarifying:

- the role that drawings play in product realization
- product realization areas that require knowledge of the *ASME Y14.5 Standard*
- the major topics in the nine sections of *ASME Y14.5 Standard*

3 PDHs

Price \$195

Understanding the Foreign Corrupt Practices Act

PD680

The dramatic increase of international business since the 1980s has been a highly complex and rather opaque process, despite the rhetoric both of globalization and the triumphant advance of capitalism. Enormous ethical challenges have come to the forefront, which need thoughtful and courageous practical initiatives to prevent business losses and non-compliance with federal and international anti-corruption laws.

The Foreign Corrupt Practices Act of 1977 (FCPA) was enacted for the purpose of making it unlawful for certain classes of persons (and professionals) and business entities to make payments to foreign government officials to assist in obtaining or retaining business.

This course addresses the roles and responsibilities of multinational corporations' obligation to comply with this Act. FCPA violations can be devastating, and it's important for companies conducting business internationally to understand and comply with the FCPA. The actions of your employees and agents can greatly impact whether or not your company is in FCPA compliance. We offer practical training on how to work successfully with foreign businesses and governments without violating US laws.

Each participant will receive a copy of *The U.S. Foreign Corrupt Practice Act* and the *U.K. Bribery Act Pocketbook*.

You Will Learn To

- Create policies and procedures that address both FCPA and major non-U.S. anti-corruption legislations
- Explain the essentials of as well as how to apply the FCPA to avoid costly violations
- Analyze business scenarios, transactions and partnership/alliances to prevent FCPA violations
- Describe how to work with foreign government officials without violating FCPA
- Describe how to design effective protocols to monitor FCPA/anti-corruption compliance

Who Should Attend

Executives, international sales and marketing professionals, all employees, whether staff associates or officers, who interact with foreign governments and businesses and who are advised to clearly understand the laws and how to follow them

Instructor Marcus Goncalves
2 Days, 1.5 CEUs, 15 PDHs
Member \$1,450 / List Price \$1,550

Save up to \$650 by enrolling in **PD681** – a combo course consisting of this course (**PD680**) and **PD674** “International Business Ethics and the Foreign Corrupt Practices Act.”

International Business Ethics and Foreign Corrupt Practices Act

PD674

Is there a need for a differentiated economic analysis beyond simple profit maximization? Should there be an active participation of the world's religions in coping with global issues? What is the role of information technology in different cultures? What are the roles and responsibilities of multinational corporations, especially considering compliance with the U.S. Foreign Corrupt Practices Act (FCPA)?

Where ethical norms are in conflict, which ethical norms ought to guide business conduct in other nations and cultures? While adopting host country norms is a way to respect the host cultures, shouldn't professionals resist host country norms that are morally unethical?

This 3-day course provides comprehensive coverage of international business ethics, fostering awareness of how the actions of Multinational Corporation's employees and agents can greatly impact whether or not a company is in ethical violation and therefore, subject to the U.S. FCPA. This course provides an overview of the FCPA, but we strongly encourage participants to take the 2-day FCPA course (**PD680**) as standalone course if you are already familiar with international business ethics issues and challenges, or, ideally, together.

Each participant will receive a copy of *Ethics for International Business: Decision Making in a Global Political Economy*, by John M. Kline.

You Will Learn To

- Describe the value foundation for a global business and society
- Explain the importance of ethics in international business
- Describe International human rights concepts and principles
- Devise strategies to foster international business ethics
- Develop a series of ethical business guidelines
- Describe how to improve control mechanisms in promoting global ethical business processes
- Explain how to make decisions when dealing with ethical dilemmas

Who Should Attend

Executives, international sales and marketing professionals and all employees, whether staff associates or officers, who interact with foreign governments and businesses, as well as any professional interested in learning how to successfully work with foreign businesses and governments without violating U.S. laws

Instructor Marcus Goncalves
3 Days, 2.3 CEUs, 23 PDHs
Member \$1,895 / List Price \$1,995

Save up to \$650 by enrolling in **PD681** – a combo course consisting of this course (**PD674**) and **PD680** “Understanding the Foreign Corrupt Practices Act.”

Take This Combo Course and Save Up to \$650!

International Business Ethics & Foreign Corrupt Practices Act Combo Course

PD681

This 5-day combo course consists of **PD674** “International Business Ethics and Foreign Corrupt Practices Act” and **PD680** “Understanding the Foreign Corrupt Practices Act.” If you take these courses as a combo you could **SAVE UP TO \$650!**

Instructor Marcus Goncalves **5 Days, 3.8 CEUs, 38 PDHs** **Member** \$2,775 / List Price \$2,895

The Engineering Manager: Engaging Today's Workforce

PD475

This program focuses on providing a toolbox of essential skills any supervisor, manager, or team leader who needs to assist individuals and teams in their quest to reach high levels of performance. The course provides simple, direct solutions to the most common challenges managers encounter, such as, how to motivate others, when and how to coach, and dealing with non-performance. The most useful concepts in the behavioral sciences have been distilled into a basic approach to managing people and teams. In addition, special emphasis is placed on the changing nature of today's workforce.

You Will Learn To

- Explain how to improve team performance and commitment
- Encourage employee initiative and avoid grievances, complaints and legal problems
- Increase your communication and leadership skills
- Motivate the under-achiever and get outstanding team performance
- Mediate disputes between employees
- Develop a personal plan for success

Who Should Attend

Current and aspiring supervisors, managers, team leaders and technical professionals who manage people or departments and seek a solid foundation in management skills and techniques

Instructor Gary Dichtenberg

2 Days, 1.5 CEUs, 15 PDHs

Member \$1,450 / List Price \$1,550

Save up to \$450 by enrolling in **PD685**, a combo course consisting of this course (**PD475**) and **PD676** "Strategic Thinking."

Strategic Thinking

PD676

The ability to make sound decisions is essential for long-term personal and professional success. Strategic thinkers are able to distinguish between causation and correlation, emotion and intellect. They are able to apply proven methods to evaluate risk and determine the best choice for action.

In this one-day course you will be presented with both standard tools (e.g., SWOT) and innovative approaches from game theory. You will learn how to discern fallacious reasoning traps as well as ways to counter them. In addition, you will practice using a powerful model to construct and deliver a winning argument.

You Will Learn To

- Recognize opportunities to influence and create strategic alliances
- Use strategic thinking to identify key strengths and weaknesses in your work group
- Apply strategic models that can be used immediately
- Develop persuasive skills to sell your strategic idea
- Describe and apply strategic and tactical thinking, paradigms, risk, and judgment in all aspects of your work
- Use strategic thinking to add value to your organization
- Identify one's own thinking style and how to improve individual and group functioning
- Explain how to apply the cost/benefit of risk

Who Should Attend

Managers, supervisors and team leaders who need to improve their decision-making skills and enhance their strategic outlook

Instructors Gary Dichtenberg

1 Day, 0.8 CEUs, 8 PDHs

Member \$795 / List Price \$895

Save up to \$450 by enrolling in **PD685**, a combo course consisting of this course (**PD676**) and **PD475** "The Engineering Manager: Engaging Today's Workforce."

Take This Combo Course and Save Up to \$450!

The Engineering Manager: Engaging Today's Workforce and Strategic Thinking Combo Course

PD685

This is a combo course consisting of **PD475**, "The Engineering Manager: Engaging Today's Workforce" and **PD676**, "Strategic Thinking." If you opt to take this combination course you could **SAVE UP TO \$450**.

Instructor Gary Dichtenberg

3 Days, 2.3 CEUs, 23 PDHs

Member \$1,895 / List Price \$1,995

Comprehensive Negotiating Strategies®: Engineers and Technical Professionals

PD575

This course is specifically designed for engineers and technical professionals who handle, deal with and/or negotiate contracts, terms, timelines, deadlines, quality issues, specifications, materials, personnel, licensing agreements, schedules, structural and design related issues, project management issues, freight and shipping, customer relations, procurement, operations, equipment, international agreements, cultural, political, IT and/or environmental issues, and more.

CNS: E&TP uses a unique analytical approach to negotiation that is based on the Comprehensive Negotiation Continuum™. This is a proprietary tool that allows participants to ascertain and respond to virtually any negotiation challenge quickly, as it has been designed and developed to be effective in today's complex competitive global environment. One recent ASME participant of the program described CNS this way, "Great examples and interaction, especially relating negotiation to math and to science."

By focusing on the CNS framework and CNS Continuum, participants learn how to integrate their existing knowledge and experience together with those updated strategies, tactics, and techniques included in the workshop to limit their risks, expand their opportunities, and create professional-, industry- and business sector-specific strategies consistent with each participant's unique goals and objectives.

Each participant will receive a copy of the book, *Beyond Negotiating: Influence – Rapport – Results*, written by the instructor; a copy of the book, *ROADMAP to Success*, written by Derrick Chevalier, Dr. Steven Covey and Dr. Ken Blanchard; as well as a course workbook.

You Will Learn To

- Describe the CNS Six Tenets of Negotiation
- Explain how to use The CNS Continuum®
- Identify negotiation techniques and explain how to apply them
- Conduct a survey of tactics, techniques, and theory
- Explain how to use Competitive Intelligence

Who Should Attend

Engineers, technical professionals, scientists, project managers, business development professionals, IT professionals, financial executives and business managers from technology-driven corporations

Instructor Derrick Chevalier
2 Days, 1.5 CEUs, 15 PDHs
Member \$1,450 / List Price \$1,550

See pages 92–95 for dates and locations of ASME Public Courses delivered in the USA during Spring 2016.

Communication Essentials for Engineers **NEW!**

PD692

This course focuses on building a toolbox of essential communication skills for engineers and technical professionals. Participants use practice tools like pulling, rather than pushing others to get agreement, how to listen effectively, how to give a straight message to a fellow employee, and how to manage personal criticism.

Understanding the need for and developing the skills to get along with others more effectively and improve teamwork is critical to achieving organizational goals and increasing work productivity. This program also covers how to identify and deal with difficult people and situations.

You Will Learn To

- Develop a toolbox of communication skills
- Employ communication skills needed to enhance teamwork
- Practice and enhance listening skills to get work done through others
- Recognize one's personal and professional interfacing style
- Turn personal criticism into productive feedback
- Combine a variety of communication skills to achieve interpersonal goals
- Apply self-management skills to maintain personal energy and motivation

Who Should Attend

Professional engineers who want to improve their interpersonal communication in the workplace

Instructor Gary Dichtenberg
2 Days, 1.5 CEUs, 15 PDHs
Member \$1,450 / List Price \$1,550



Effective Management of Research and Development Teams and Organizations

PD506

Managing the productivity and excellence of an R&D organization offers a unique set of problems and unusual challenges. This uniqueness arises from two basic facts:

- (1) the character of the enterprise and
- (2) the highly specialized, articulate and autonomous people involved in R&D.

This course will explain how managing an R&D organization is largely the art of integrating the efforts of diverse, creative, intelligent and independent individuals. It will offer a concise, yet effective, overview of the management issues and their solutions.

The ideas presented in this course consist of the work of a multitude of experts and focuses on ways to improve the productivity of R&D. It is designed to bring the attendees to a stage where they can apply this information and to foster excellence and innovation in their R&D organization.

You Will Learn To

- Describe the innovation process in an effective R&D organization
- Identify the ingredients of successful technology transfer in an R&D atmosphere
- Contribute effectively to the management and leadership throughout the organization
- Explain how to make a smooth transition from a technical staff position to a management and leadership position
- Explain how to achieve optimal results from the R&D organization

Who Should Attend

Managers, supervisors, team/group leaders, engineers, project managers, and other technical personnel as well as faculty members, department heads, research administrators, managers responsible for sponsoring research and policy makers in science and technology

Instructor Bruce Chehroudi

3 Days, 2.3 CEUs, 23 PDHs

Member \$1,895 / List Price \$1,995

See pages 92–95 for dates and locations of ASME Public Courses delivered in the USA during Spring 2016.

Leadership and Organizational Management

PD531

This course covers the characteristics of an exceptional manager from managing and motivating knowledge workers and teams, organizational structure, working with cross functional teams, managing expectations and performance, conflict resolution and strategies for changing scope.

You Will Learn To

- Explain operational issues including recruitment, negotiation and conflict-resolution techniques
- Describe strategic management models and thinking
- Explain the differences between leadership and management
- Describe the dynamics of dealing with diverse teams

Who Should Attend

Engineers and technical professionals currently or aspiring to manage individuals and teams

Instructor Rita Rizzo

2 Days, 1.5 CEUs, 15 PDHs

Member \$1,450 / List Price \$1,550

Also available as Online Instructor-Supported Course **EL532**

ASME Books of Interest



Primer on Engineering Standards (2014)

Maan Jawad and **Owen R. Greulich**

100 pp ISBN: 9780791860342
Print Book Member \$39 / List Price \$49
Order Number: 860342



Knowledge Tornado: Bridging the Corporate Knowledge Gap, Second Edition

Marcus Goncalves

200 pp ISBN: 9780791859957
Print Book Member \$39 / List Price \$49
Order Number: 859957

GET MORE INFORMATION AT ASME.ORG

Core Engineering Management

PD620

The foundation of any engineering manager's toolkit is an understanding of core management theory.

This course takes the theory and applies it to real-world situations through case studies and project examples. At each step the legal, personnel and economic environments are considered, and the result is a clear understanding of how the elements of management are intertwined.

You Will Learn To

- Determine the correlation between a business plan and new product development
- Determine future need for product using a trend analysis and to calculate life cycle costs
- Identify supply/demand issues
- Identify training needs
- Select appropriate codes
- Develop a Work Schedule Breakdown (WBS)
- Identify the steps to take if a contract is breached
- Describe basic information on patents, copyright and trademarks
- Develop balanced scorecard objectives, measures, targets, and initiatives
- Complete a risk analysis and problem-solving techniques
- Move team members through a change
- Explain leadership vs. management behaviors and competencies
- Describe diversity awareness
- Identify conflict-resolution styles
- Describe codes of ethics
- Locate pertinent information in reference to certification, accreditation and licensing

Who Should Attend

Engineering managers of work teams and project managers for engineering projects

Instructor Jackie Martin

4 Days, 3 CEUs, 30 PDHs

Member \$2,295 / List Price \$2,450

ASME Book of Interest



Unwritten Laws of Ethics and Change in Engineering (2015)

120 pp ISBN 9780791860588

Print Book Member \$23 / List Price \$29

Order Number: 860588

GET MORE INFORMATION AT ASME.ORG

eLEARNING //////////////

Leadership and Organizational Management: Leading Individuals and Engineering Project Teams

Online Instructor-Supported Course EL532

Learn how to lead project teams successfully to deliver on time and on budget, from selection of appropriate project team members through management of team dynamics and communication, especially in remote teams. Investigate tools for saving teams in trouble, look at problem solving and team focus. Instead of just being part of the team, learn how to become the leader of the team.

You Will Learn To

- Explain operational issues including recruitment, negotiation and conflict-resolution techniques
- Describe strategic management models and thinking
- Explain the differences between leadership and management
- Describe the dynamics of dealing with diverse teams

22.5 Hours, 2.3 CEUs, 23 PDHs

Member \$595 List Price: \$695

Also available as a 2-day Public Course: **PD531**, "Leadership and Organizational Management" (see page 42)

Ethics for Engineers: Doing the Right Thing When No One is Looking

Online Assessment Based Course ZABC3

Ethics has been defined as doing the right thing when no one is watching. Are you? Is everyone around you? What should you do if they're not? Is what you think is right the same thing as what others think is right? In this learning for engineers we'll explore all these questions and you'll finish with how-to's for yourself and others.

This is an intermediate level course for all engineers as we all have to display ethical behavior and help others display it as well.

3 PDHs

Price \$75

Changing Organizational Culture

Online Assessment Based Course ZABC8

This course explains how to deal with change in your organization and offers management techniques that incorporate both engineering and psychological approaches to change the way an organization functions to help minimize discomfort and uncertainty throughout the organization. Changing the way an organization functions can be a tenuous process; therefore, it is crucial to implement initiatives in a way that minimizes turnover of talented employees and maximizes employee productivity.

1.5 PDHs

Price \$95

Project Management for Engineers and Technical Professionals

PD467

This 3-day course is focused on the mechanical engineering industry, and provides an overview of project management fundamentals and techniques using lecture, small group case studies, discussions and hands-on simulations geared towards mechanical engineers and their industry.

This program is not classroom lecture. Participants will work in teams to plan a real-world project in the area of mechanical engineering. The team environment amplifies and accelerates participants learning. It also prepares participants to manage their projects in the work environment. In addition, this course allows each team to build an individual project idea from design to completion, emulating the project management life cycle.

This course is 100% compliant with the Project Management Institute's (PMI's®) current PMBOK.

Each student will receive a copy of *International Project Management for Technical Professionals* and *The Knowledge Tornado: Bridging the Corporate Knowledge Gap*.

You Will Learn To

- Understand project management concepts from a system theoretic point of view
- Understand the role of project manager as a person who plans, controls, and optimizes a multi-task project towards a singular goal in a timely and cost-effective manner
- Comprehend the science and art of project management in settings where scarce resources, risky decisions, and conflicting tensions continually require sensible and effective compromises
- Explain concepts and applied techniques for cost effective management of both long-term development programs and short-term projects

Who Should Attend

Mechanical engineers, project managers, project leaders or anyone who has been or will be assigned project management responsibilities

Special Requirements

As prerequisites, participants should have basic management skills, and be involved or planning to become involved with project management. Participants should also have an understanding of basic accounting and budgeting skills, which will be utilized in budgeting project costs and practical exercises during the course.

Instructors Marcus Goncalves, Brian Porter

3 Days, 2.3 CEUs, 23 PDHs

Member \$1,895 / List Price \$1,995

Take this course and **PD496** "Preparing for the Project Management Professional Certification Exam" and **save up to \$650** by enrolling in **PD629** "Project Management Combo Course."

Preparing for the Project Management Professional Certification Exam

PD496

The course is designed to help mechanical engineers prepare for the Project Management Professional Examination, and is focused on Project Management Institute's (PMI®) PMBOK grid, covering all of the materials PMI considers important in the exam. This course is revised often in order to reflect the most recent changes in the Project Management Professional Examination and coverage of the *Guide to the Project Management Body of Knowledge* (PMBOK).

The entire nature of project management is reviewed, including how all of the tools and techniques relate to one another, and how it all goes together to make a unified methodology to successfully manage products. This course is packed with simulation questions and by the end of the course, you will have answered more than 900 questions.

Each participant will receive a copy of the *PMP Project Management Professional Study Guide*, 4th Edition, by Joseph Phillips; course notes/presentation is composed of a PowerPoint presentation handout with space for notes; and access to MGCG's online simulation exams after the course, until you pass the exam.

You Will Learn To

- Understand and practice for the PMP certification exam using the latest and most complete test-preparation materials available
- Review each competency area tested on the exam through numerous case studies and other valuable practices tools, including more than 900 practice questions, simulated questions in the situational format of the new exam, as well as discussion and simulation questions on professional responsibility and on risk management
- Prepare to answer PMP certification exam questions on Scope and Time Management, Cost and Human Resources Management, Risk and Quality Management, Contract and Procurement Management, Communications Management and Professional Responsibility

Who Should Attend

Mechanical engineers and technical professionals who possess project management knowledge and are preparing to take the PMP certification exam

Instructor Marcus Goncalves, Brian Porter, Alan Cline

2 Days, 1.5 CEUs, 15 PDHs

Member \$1,450 / List Price \$1,550

NOTE: The Project Management Professional (PMP®) certification is designed to certify project managers who meet the criteria for both knowledge and experience. Along with the changes of March 2002, PMI now requires at least 35-hours of project management education. Therefore, it is recommended that candidates register for **PD467**, "Project Management for Engineers and Technical Professionals" first, or take the two courses combined and register for **PD629** "Project Management Combo Course," and **save up to \$650**.

Take This Combo Course and Save Up to \$650!

Project Management Combo Course

PD629

This course is a combination of "Project Management for Engineers and Technical Professionals" (**PD467**) and "Preparing for the Project Management Professional Certification Exam" (**PD496**). Take these courses as a combo and **SAVE UP TO \$650**.

Instructor Marcus Goncalves **5 Days, 3.8 CEUs, 38 PDHs** **Member** \$2,775 / List Price \$2,895

TRIZ: The Theory of Inventive Problem Solving

PD513

This course provides a basic introduction to the Inventive Problem Solving Process known as “TRIZ” (Russian acronym for “Theory of Inventive Problem Solving”). TRIZ is a structured, “left-brained” approach to breakthrough innovation through the use of patterns of invention documented in the most inventive of the world’s patents. This analysis demonstrates an overall algorithm, which when followed, allows anyone to provide breakthrough and novel solutions to problems as well as new product and business concepts.

Each participant will receive a complete set of course notes, a copy of the TRIZ 40 Inventive Principles, a copy of all course problems and solutions, and a copy of the book, *The Ideal Result: What It Is and How to Achieve It*, written by the instructor.

You Will Learn To

- Identify patterns of invention and describe how to use breakthrough ideas from parallel universe technology areas
- Explain the basic TRIZ problem solving algorithm and its basic tools including Ideal Final Result, resource identification and use, contradiction resolution, 40 inventive principles and the TRIZ contradiction table
- Explain how to use TRIZ for failure prediction and analysis
- Explain how to use TRIZ for business and organizational problem solving
- Describe TRIZ Lines of Evolution and how to use them for strategic planning, new product development, and forecasting
- Explain how to integrate TRIZ with other enterprise tools and assessments
- Describe how to integrate TRIZ effectively within your organization

Who Should Attend

Engineers, scientists and technical managers focused on breakthrough innovation and problem solving, professionals interested in adding a breakthrough problem-solving tool to problem definition processes such as Six Sigma and DFSS, as well as Innovation managers interested in improving the quality of inventions and intellectual property

Instructor Jack Hipple

3 Days, 2.3 CEUs, 23 PDHs

Member \$1,895 / List Price \$1,995

Free ASME Training & Development Spring 2016 eCalendar Now Available

Download the FREE Spring 2016 ASME Training & Development eCalendar listing dates and locations of Live Course offerings in North America, Europe and the Middle East through June 2016, as well as eLearning Courses available worldwide from the Internet any time.

Visit:

go.asme.org/springtraining

or scan with a smart device:



See pages 92–95 for dates and locations of ASME Public Courses delivered in the USA during Spring 2016.

eLEARNING

Project Management for Engineers

Online Instructor-Supported Course EL511

Benefits of this course include identifying the project management skills you have and the ones that need enhancement; learning how to use a step-by-step process to plan, implement and evaluate each project; developing strategies for making other people "able" and communicating with them on their progress; and understanding how to steer a project around lack of resources, wrong direction and office politics.

You Will Learn To

- Apply several skills to facilitate the success of a project on which you are currently working
- Describe the project life-cycle
- Provide effective feedback to others and improve your listening skills
- Integrate what you have learned into an effective process
- Develop and implement the strategy and plan
- Explain how to set performance standards

22.5 Hours, 2.3 CEUs, 23 PDHs

Member \$595 / List Price: \$695

Also available as a 3-day Public Course: PD467, "Project Management for Engineers and Technical Professionals" (see page 46)

Technical Writing for Engineers: Giving Readers What They Need

Online Assessment Based Course ZABC2

Different reader groups read the same documents. However, their level of understanding can vary greatly due to their experience and your writing. Want to help them understand your intent? Learn to create your documents (the writing and the layout on the screen/ page) so they do just that. And in this training you work with your own weekly reports, SOPs, system designs, inspection reports, etc., so you get actual work done at the same time you're learning!

4 PDHs

Price \$100

Total Quality Management

Online Assessment Based Course ZABC6

Total Quality Management (TQM) is a system for satisfying internal and external customers and suppliers through both continuous improvements and breakthrough results that ultimately change organizational culture. This course provides the basic concepts and practices so you can apply these tools to your work and generate improvement and results. When you apply the TQM approach, it has an overarching impact on all aspects of the core business processes. This self-paced course provides students with case studies, which illustrate how to apply effective TQM strategies in the workplace.

3 PDHs

Price \$145

Financial Resource Management

Online Instructor-Supported Course EL533

This course covers a wide range of financial management of topics, including the fundamentals and key components of the business plan, available and alternative funding sources, engineering economic analysis techniques such as NPV and ROI, and the preparation, interpretation and management of contracts.

You Will Learn To

- Apply financial accounting and budgeting procedures
- Use applied finance, short and long term
- Use engineering economic analysis techniques
- Perform capital budgeting and resource planning
- Use Financial Risk Analysis
- Identify procurement and contract procedures; contract management

22.5 Hours, 2.3 CEUs, 23 PDHs

Member \$595 / List Price: \$695

Financial Resource Management For Engineers

Online Assessment Based Course ZABC40

This course describes the fundamental terminology, processes, and strategies of business finance and accounting and covers business plan fundamentals and key components, available and alternative funding sources, engineering economic analysis techniques such as NPV and ROI, along with contract preparation, interpretation and management.

3 PDHs

Price \$195

Marketing, Sales and Communications for Engineers

Online Assessment Based Course ZABC41

This course introduces the skills, knowledge and techniques of marketing and its interaction with the operations and technical arenas of a firm. It covers a broad range of topics, including market research and analysis; the impact of trends and the environment; forecasting; risk analysis; sales, pricing, and consumer satisfaction; advertising and integrated marketing communications; and branding.

2 PDHs

Price \$195

For more information, visit:



go.asme.org/eLearning

Developing Products

Online Instructor-Supported Course EL530

This course is directed at engineering managers who are responsible for new product development, services, or processes. The purpose of the course is to provide skills and knowledge in managing the product planning, design, and manufacturing processes. It covers the project life cycle, determining resource requirements, detailed planning and management of the design process.

You Will Learn To

- Explain how product development, projects, and company strategy are interdependent
- Describe a process to plan and execute projects
- Coach others in methods of product development
- Communicate key objectives and expectations more effectively
- Describe how to obtain better results through thorough planning and management
- Explain how to solve strategic issues through tactical implementation
- Direct the engineering development process more effectively

22.5 Hours, 2.3 CEUs, 23 PDHs

Member \$595 / List Price \$695

Marketing, Sales and Communications for Engineers

Online Instructor-Supported Course EL531

This course provides skills, best practices and an appreciation of marketing and its interaction with the operations and technical arenas of an organization. It covers communication skills, market research and analysis, benchmarking, trends, the impact of the environment, technology assessment forecasting, risk analysis, sales and consumer satisfaction, advertising and integrated marketing communications, pricing, products and branding.

You Will Learn To

- Explain how to interpret a market analysis (customer base, competition)
- Identify best practices and lessons learned
- Explain how to conduct business research and forecasting tools and techniques
- Explain how to apply risk analysis, trend analysis (economics, social, political, environmental, technology), and technology assessment practices and techniques
- Develop presentation skills, sales and advertising practices and customer satisfaction strategies
- Describe how to use marketing and branding techniques; product portfolio analysis; global trade and international operations; and pricing strategies

22.5 Hours, 1.5 CEUs, 15 PDHs

Member \$395 / List Price: \$495

Execution: How to Get Results

Online Assessment Based Course ZABC7

To achieve great results takes a lot of planning, effort and effective execution. How do you define the results you wish to achieve? How do you appropriately plan your efforts? How can you get others truly involved in helping you achieve what you want to achieve? How do you address the problems that come up along the way? How can you effectively learn from and share your execution experience? This course answers these and many other related questions.

1.5 PDHs

Price \$95

Ethics for Engineers: Doing the Right Thing When No One is Looking

Online Assessment Based Course ZABC3

Ethics has been defined as doing the right thing when no one is watching. Are you? Is everyone around you? What should you do if they're not? Is what you think is right the same thing as what others think is right? In this learning for engineers we'll explore all these questions and you'll finish with how-to's for yourself and others.

This is an intermediate level course for all engineers as we all have to display ethical behavior and help others display it as well.

3 PDHs

Price \$75

Strategic Planning

Online Instructor-Supported Course EL534

This course deals primarily with business strategies, and covers: strategic destinations and planning domestically and internationally, planning for new technologies, technology assessment practices and techniques, system design and life-cycle engineering, partnering and outsourcing strategies, as well as change management techniques and adjustment strategies.

You Will Learn To

- Identify available resources to formulate action plans
- Communicate recommendations and action plans
- Identify and obtain information on competitor's method application
- Synthesize information and interpret results
- Apply technology assessment practices and techniques
- Describe how to design for environment, for maintenance, for re-usability, for life-cycle analysis
- Explain how to establish outsourcing and partnering relationships
- Implement change effectively in a team

22.5 Hours, 2.3 CEUs, 23 PDHs

Member \$595 / List Price \$695

BVP Code, Section III, Division 1: Class 1, 2 & 3 Piping Design

PD615 ASME STANDARDS COURSE

This course provides information and instruction on the design, analysis, and qualification of nuclear power plant piping systems that are consistent with the ASME Boiler and Pressure Vessel Code, Section III, Division 1, Subsections NB/NC/ND, as well as the parallel requirements of ASME B31.1 for nuclear power plants. The methods and criteria described throughout the course apply to new systems, as well as modifications or repairs to existing systems.

The course reviews the ASME III Code technical requirements, their technical basis, and the corresponding regulatory requirements for the design, analysis, and qualification of Class 1, 2, and 3 piping systems, for normal operating and postulated accidents. The topics covered include pressure design, thermal flexibility analysis, fatigue analysis, seismic, waterhammer, flow-induced vibration, and high energy line breaks. The course also covers best industry practices for correct and cost-effective ASME III design, analysis, and qualification.

You Will Learn To

- Identify ASME B&PVC Section III and regulatory requirements for piping system design
- Describe Class 2/3 Piping Design by Rule methods
- Identify Class 2/3 pipe supports design requirements
- Identify selected, individual piping component design requirements
- Describe the design of a simple Class 2/3 piping system
- Describe the overview of the ASME Boiler and Pressure Vessel Code
- Identify Code requirements for Class 1 Piping Design Specifications
- Explain Class 1 Piping Design by Rule (NB-3600)
- Explain Class 1 Piping Design by Analysis (NB-3200)
- Describe “non-Codes” but related nuclear piping design issues

Who Should Attend

Engineers involved in the design, analysis and qualification of ASME Boiler and Pressure Vessel Code, Safety Class 1, 2 & 3 piping systems and ASME B31.1 for nuclear power plants

Special Requirements

Participants are expected to have at least one year of experience in the design, maintenance or operation of a nuclear power reactor facility.

Instructors Jack R. Cole or George Antaki

3 Days, 2.3 CEUs, 23 PDHs

Member \$2,150 / List Price \$2,250

See pages 92–95 for dates and locations of ASME Public Courses delivered in the USA during Spring 2016.

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

PD184 ASME STANDARDS COURSE

This course presents a practical yet comprehensive overview of Section III, Division 1, including interfaces with Sections II, V and IX. While not an in-depth review of design, fabrication, inspection, quality assurance or other technical requirements, 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.

The Course provides valuable and useful information about the Nuclear Code for nuclear regulators, technical organizations, nuclear generating facility owners, equipment and material organizations, installers and authorized inspection agencies.

Insights are also provided into the regulatory significance and application of Section III and other ASME Codes included in the USNRC's regulation 10CFR 50.55a, the regulatory significance of Code Cases and Code Inquiries, enhanced with a discussion on the use of Code alternatives, as permitted by the NRC's regulations. Participants will also learn about the USNRC's 10CFR Part 21 and 10CFR50.55(e) reporting requirements.

Reference material includes background on the development of the ASME Boiler and Pressure Vessel Code, a summary of the Subsections of the ASME Boiler and Pressure Vessel (B&PV) Code, Section III, the ASME Accreditation process along with the course presentation material.

You Will Learn To

- Describe the contents of Section III, including its current scope and exclusions
- Explain how the Code is adopted by NRC and its regulatory significance
- Describe NRC's acceptance of Code Cases
- Explain the reporting requirements of NRC's 10CFR Part 21 and 10CFR50.55(e)
- 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
- Relate future trends in nuclear power development

Who Should Attend

Mechanical and mechanical system design engineers, plant systems engineers and QA and inspection personnel, including both experienced as well as entry-level personnel who want to gain an understanding of Section III of the ASME Boiler and Pressure Vessel Code and its application

Instructor Gene Imbro

4 Days, 3 CEUs, 30 PDHs

Member \$2,675 / List Price \$2,875

BPV Code, Section XI: Inservice Inspection of Nuclear Power Plant Components

PD192 ASME STANDARDS COURSE

By taking this course you will gain specific insight into how to use Section XI to save millions of dollars in plant operating costs. Covering all aspects of Section XI, this course highlights repair, replacement, modification and maintenance activities; pressure testing; as well as the relationship between the Code and regulatory and enforcement requirements. Also addressed will be the many controversial issues confronting the nuclear industry, along with discussion of the broad spectrum of opinions regarding practical application of Code requirements.

Course materials include many published ASME Interpretations that explain how Code requirements can be applied to problems that have confronted other companies. The course also highlights significant changes in the Code requirements in the last ten to fifteen years.

Designed to provide an introduction to Section XI for people who are not familiar with it, the course also provides experienced Section XI users an entirely new understanding of some of the confusing and controversial parts of Section XI.

You Will Learn To

- Explain inservice inspection requirements for Class 1, 2 and 3 systems, components and supports, as well as steel and concrete containment vessels
- Describe requirements for qualification of nondestructive examination personnel and performance of nondestructive examination
- Explain basic requirements for flaw evaluation and acceptance
- Identify Section XI requirements for repair, replacement, modification, maintenance activities and pressure testing
- Explain how to use recent revisions to Section XI to your advantage
- Describe the relationship of 10CFR50.55a and NRC Regulatory Guides, Bulletins, Generic Letters and Regulatory Issue Summaries to inservice inspection, nondestructive examination, repair, replacement and modification

Who Should Attend

Utility operating personnel responsible for nuclear power plant inservice inspection, nondestructive examination, evaluation, repair, replacement and modification, as well as personnel responsible for assessment or third-party inspection, regulation or enforcement

Special Requirements

While experience with Section XI or other ASME Codes or Standards is not required, you should have a strong technical background or hands-on experience with Code work.

Instructor Rick Swayne

5 Days, 3.8 CEUs, 38 PDHs

Member \$3,195 / List Price \$3,295

Advanced Design and Construction of Nuclear Facility Components per BPV Code, Section III

PD644 ASME STANDARDS COURSE

From suppliers' shops to construction sites, 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 provides the required skills for applying Code requirements for Nondestructive Examination (NDE) techniques for radiography, ultrasonic techniques and other forms of NDE. It also outlines the requirements for performing hydro testing and leak testing. Case studies examine real scenarios encountered in the nuclear industry.

This advanced course explores the requirements of Section III of the ASME Boiler and Pressure Vessel (B&PV) code. Through a combination of information and case studies based on real-world problems, it provides the required knowledge and skills for the professionals who are involved in the design, fabrication, construction and life extension of nuclear power plant (NPP) components.

You Will Learn To

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

Who Should Attend

Nuclear power plant designers, stress analysts, QA and inspection personnel, regulators along with reactor, welding, operations and utility engineers

Instructor

4 Days, 3 CEUs, 30 PDHs

Member \$2,675 / List Price \$2,875

Also available as Online Instructor-Supported course EL524, taught by this instructor.



Overview of Codes and Standards for Nuclear Power Plant Construction

PD633 ASME STANDARDS COURSE

This course introduces mechanical and civil engineers to ASME, its codes and standards and the ASME Boiler and Pressure Vessels (B&PV) Code as it applies to nuclear facilities. It provides an overview of Sections III and XI of the B&PV Code as well as the Guides for the Operation and Maintenance for Nuclear Power Plants. This course also reviews Sections II, V and IX as they apply to nuclear facilities.

This course also discusses the NQA-1 Quality Assurance for Nuclear Facility Applications Standard. Other topics include a brief history of the B&PV Code, the ASME Boards and Committees (including the Board on Nuclear Codes and Standards), international activity in the area of nuclear codes and ASME Nuclear Accreditation.

You Will Learn To

- Describe the scope of ASME codes and standards applicable to construction of pressure-retaining components
- Explain the purpose, organization and requirements in Sections III and XI of the ASME Boiler and Pressure Vessel (B&PV) Code, including the requirements and process for ASME Nuclear Accreditation
- Explain the purpose, organization and requirements of NQA-1 Quality Assurance for Nuclear Facility Applications and the OM Standards and Guides for the Operation of Nuclear Power Plants
- Describe the purpose, organization and requirements in Sections II, V and IX as they apply to nuclear facility construction

Who Should Attend

Engineers and managers involved in the design, analysis, and construction of nuclear facilities as well as operations and maintenance, quality assurance and quality control programs, inspection, procurement, product design, process engineering and project management

Instructor William K. (Ken) Sowder

3 Days, 2.3 CEUs, 23 PDHs

Member \$2,150 / List Price \$2,250

Design in Codes, Standards and Regulations for Nuclear Power Plant Construction

PD632 ASME STANDARDS COURSE

The course provides details of the ASME Section III Division 1 code requirements and their technical basis for the design of Class 1, 2 and 3 piping, pumps, valves and vessels in nuclear power plants.

Topics include an overview of the ASME Section III design requirements, methods of analysis and qualification criteria for each type of component, design by rule, design by analysis and qualification by testing. Supplementary requirements imposed by regulation (regulatory guides, standard review plan, etc.) will also be covered. The course also discusses related ASME codes and standards such as B16, QME-1 and OM.

Each participant will receive complimentary copies of *BPVC Section III - Rules for Construction of Nuclear Facility Components - Division 1 - Subsection NB-Class 1 Components* and *BPVC Section III - Rules for Construction of Nuclear Facility Components-Subsection NCA - General Requirements for Division 1 and Division 2*.

You Will Learn To

- Explain how to ensure that design specifications contain the minimum ASME requirements and how they relate to design input to a Design Report
- Describe the methods and criteria for design by analysis and apply pressure design equations
- Explain how to design input loads and develop the contents of an ASME Section III Design Specification
- Explain the process and analysis and qualification for extreme loads
- Describe the design rules for the design of vessels, pumps, valves and piping systems

Who Should Attend

Engineers, managers and quality personnel and inspectors involved in the design, analysis or fabrication of components or structures for nuclear power plants

Instructors Jack R. Cole, Greg Hollinger

4 Days, 3 CEUs, 30 PDHs

Member \$2,675 / List Price \$2,875

ASME Book of Interest



Containment Structures of US Nuclear Power Plants

Hansraj Ashar

332 pp ISBN: 9780791860175
Print Book Member \$149 / List Price \$199
Order Number: 860175

GET MORE INFORMATION AT ASME.ORG

See pages 92–95 for dates and locations of ASME Public Courses delivered in the USA during Spring 2016.

NQA-1 Requirements for Computer Software Used in Nuclear Facilities

PD606 ASME STANDARDS COURSE

Focusing primarily on Subpart 2.7, QA Requirements for Computer Software, this course examines the requirements found in NQA-1 for using computer software in nuclear facilities. Participants will learn to apply NQA-1 to the practice of developing, using, maintaining or procuring software used in nuclear facilities.

Each participant will receive a complimentary copy of the *ASME NQA-1 - Quality Assurance Requirements for Nuclear Facility Applications (QA) Standard*.

You Will Learn To

- Explain how ASME NQA-1 applies to computer software such as design and analysis software including use of spreadsheets, custom developed software, configurable software such as that found in digital instrumentation and control systems, and acquired software including software dedication
- Describe the regulatory requirements, standards, and guidance associated with computer software used in nuclear facilities
- Identify the elements of a QA Plan for computer software activities
- Prepare and conduct a computer software audit

Who Should Attend

Design, software, and quality engineers, regulators, licensing and procurement personnel, program managers and auditors

Special Requirements

Participants should have a general understanding of the software development life cycle and quality assurance process.

Instructor Ronald C. Schrotke, Jr., or Norman P. Moreau

2 Days, 1.5 CEUs, 15 PDHs

Member \$1,625 / List Price \$1,725

ASME Book of Interest

Toward Consistent Design Evaluation of Nuclear Power Piping by Nonlinear Finite Element Analysis (2015)

Lingfu Zeng, Lennart Jansson and Nils-Erik Wiberg

80 pp ISBN: 9780791861042

Print Book Member \$79 / List Price \$99

Order Number: 861041

GET MORE INFORMATION AT ASME.ORG

ASME NQA-1 and DOE Quality Assurance Rule 10 CFR 830 **NEW!**

PD711 ASME STANDARDS COURSE

ASME produces codes and standards that are the most widely used in the world for the design, manufacture, operation, maintenance and repair of components within nuclear facilities. This 3-day course discusses the ASME NQA-1 Standard and its four parts, the principal intentions of this Standard and how to apply its provisions for Department of Energy nuclear facility suppliers, contractors and DOE National Laboratories.

This course is designed to provide management, procurement, engineering and program management with an introduction to and overview of ASME as an organization, its Codes and Standards as well as the ASME NQA-1 Standard. The instructor explains how this Standard is applied to DOE nuclear facilities, as well as providing a brief overview of the subsections of B&PV Code, Section III, as they apply to construction of nuclear facilities and DOE Orders concerning quality assurance, such as 414.1D, G414.1-2B, 450.2. Other covered topics include a brief history of the B&PV code, the ASME Board on Nuclear Codes and Standards and the NQA-1 guidance for implementation within DOE Rules and Orders for Quality Assurance.

Participants will receive complimentary copies of the *ASME NQA-1 Quality Assurance Requirements for Nuclear Facility Applications Standard*.

You Will Learn To

- Explain the purpose and organization of ASME
- Describe the scope of ASME codes and standards applicable to components in a nuclear facility
- Explain the purpose, organization and requirements of NQA-1 Quality Assurance for Nuclear Facility Applications
- Identify the 18 criteria basis of the NQA-1 Standard contained in Part 1, NQA Parts 2, 3 and 4
- Apply the four principal Department of Energy requirement documents pertaining to nuclear quality assurance for nuclear facilities

Who Should Attend

This course is designed for those who are or will be directly or indirectly involved in the design, procurement, manufacturing and construction, maintenance or operation of a nuclear facility, including anyone involved in quality assurance, quality control programs, inspection or procurement of materials, as well as nuclear regulatory personnel, university faculty and students

Instructor William K. (Ken) Sowder

3 Days, 2.3 CEUs, 23 PDHs

Member \$2,150 / List Price \$2,250

Risk-Informed Inservice Testing

PD597

How to convert a typical IST Program 10-year update to a RI-IST (Risk-Informed Inservice Testing) Program that the Nuclear Regulatory Commission will accept and approve is the focus of this course.

It provides an overview of the ISTE (the subsection of the code referring to Risk Testing Requirements); an overview of ISTA (General Testing Requirements); program requirements, guidance and preparation; industry risk-informed initiatives; performance-based initiatives; and several case studies.

While designed specifically for the IST engineers working at the plant or IST program regulators with 5 to 10 years' experience in the nuclear industry, new engineers will also benefit from the basic information the course provides related to safety systems, standby equipment and application of Probabilistic Risk Assessment Methods (PRA).

You Will Learn To

- Perform Risk Informed-IST 10-year update of the IST program
- Identify RI-IST requirements
- Identify PRA strengths and weaknesses
- Describe the details of current and future regulatory changes affecting RI-IST

Who Should Attend

Inservice testing engineers and regulators, project managers, engineering managers with risk assessment responsibilities

Instructor C. Wesley (Wes) Rowley

3 Days, 2.3 CEUs, 23 PDHs

Member \$1,985 / List Price \$1,995

Also available as Online Instructor-Supported Course EL523, led by the instructor.

Developing a New Inservice Testing Program

PD598

This course provides an overview of the ISTE (the subsection of the code referring to Risk Testing Requirements); an overview of ISTA (General Testing Requirements); program requirements, guidance, and preparation; industry risk-informed initiatives; performance-based initiatives; and several case studies.

While designed specifically for the IST engineers working at the plant or IST program regulators with 5 to 10 years of experience in the nuclear industry, new engineers will also benefit from the basic information the course provides related to safety systems, standby equipment, and application of Probabilistic Risk Assessment Methods (PRA).

You Will Learn To

- Perform Risk Informed IST 10-year update of the IST program
- Identify RI-IST requirements
- Identify PRA strengths and weaknesses
- Explain details of current and future regulatory changes affecting RI-IST

Who Should Attend

Inservice testing engineers and regulators, project managers, engineering managers with risk assessment responsibilities

Instructor C. Wesley (Wes) Rowley

5 Days, 3.8 CEUs, 38 PDHs

Member \$2,775 / List Price \$2,895

Also available as Online Instructor-Supported Course EL523, led by the instructor.



* ASME Course Evaluation Survey completed between July 2012 and June 2014 by 6,108 participants



ASME NQA-1 Lead Auditor Training

PD675

This course provides prospective lead auditors with sufficient formal training to assist in meeting the training requirement for ASME NQA-1 and N45.2.23 auditors.

Each participant is given the body of knowledge and understanding of auditing methods and techniques to conduct audits of nuclear quality assurance programs. The material covers the development, organization and administration of an audit program; the mechanics of an individual audit; audit objectives; and auditing techniques.

Participants will receive complimentary copies of the *ASME NQA-1 Quality Assurance Requirements for Nuclear Facility Applications* Standard.

You Will Learn To

- Identify and become knowledgeable of rules and regulations, standards and guidance applicable to nuclear facilities
- Explain how to examine the general structure of quality assurance programs such as NQA-1 and ISO 9001
- Describe how to establish an audit program and how to plan for conducting audits
- Identify the four phases of the audit life cycle:
1) preparation, 2) performance, 3) reporting, and 4) follow-up
- Identify the duties and responsibilities of both an auditor and lead auditor
- Evaluate quality assurance program documents and associated procedures
- Explain how to prepare and perform internal and supplier audits including how to report and follow up on findings
- Demonstrate an understanding of auditing methods and techniques through participation in practical exercises and examination

Who Should Attend

Quality engineers, auditors, engineers, project managers, inspection personnel, production supervisors, facility representatives, procurement personnel, safety system oversight staff and assessment personnel

Instructors Norman P. Moreau

4 Days, 3 CEUs, 30 PDHs

Member \$2,295 / List Price \$2,450

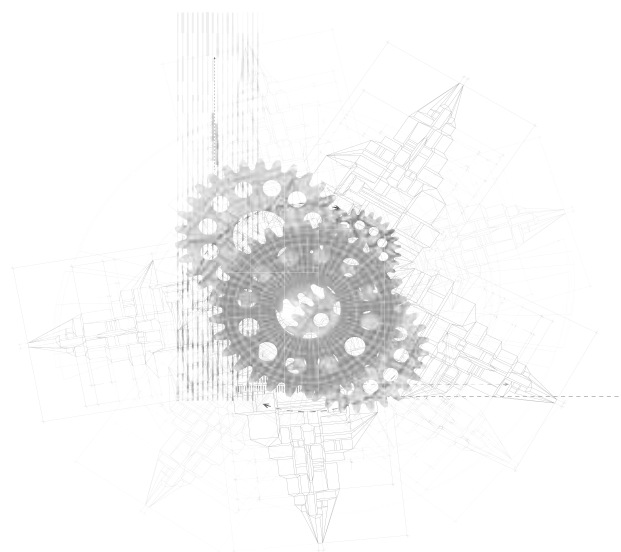
Free ASME Training & Development Spring 2016 eCalendar Now Available

Download the FREE Spring 2016 ASME Training & Development eCalendar listing dates and locations of Live Course offerings in North America, Europe and the Middle East through June 2016, as well as eLearning Courses available worldwide from the Internet any time.

Visit:

go.asme.org/springtraining

or scan with a smart device:



Special Offer to Non-ASME Members

Attendees of any ASME Training & Development public course registered as non-ASME members will receive a FREE one-year membership to ASME – currently valued at up to \$149 – following completion of an application form which will be sent to non-members after the program.

All ASME members will continue to enjoy special “Member Only” discounts off the list price on most ASME Training & Development public courses and elearning programs.

eLEARNING

BPV Code, Section III: Introduction

Online Instructor-Supported Course EL509

This course introduces participants to the fundamentals of Section III of the ASME Boiler Code with an in-depth review of the "Rules for Construction of Nuclear Facility Components." Participants learn the ASME Code requirements for the design and construction of a pressure boundary of nuclear power plant components. The course also reviews and discusses the requirements for planning, managing and conducting Q.A. programs for controlling the quality of activities performed under the jurisdiction of Section III. It also updates designers, procurement engineers and quality assurance engineers on the latest developments, Addenda and Code Cases pertaining to the application of the Code.

You Will Learn To

- Explain the Classification of Components and Supports - Article NCA-2000
- Describe the Responsibilities and Duties - Article NCA-3000
- Identify the Quality Assurance Requirements - Article NCA-4000
- Identify Authorized Inspection requirements- Article NCA-5000
- Explain the Application of Concepts - Article NB-3200
- Identify the Class 1 Vessel Design requirements- Article NB-3300
- Describe Finite Element Analysis, Stress Classification & interpretation of FEA Stress Results for NB-3200 Design
- Identify Pipe Fittings and Components
- Explain the Piping Stress Analysis as per ASME Code
- Describe Layout Considerations in Class 1 Piping Systems
- Identify Specific Component Support Requirements

22.5 Hours, 2.3 CEUs, 23 PDHs

Member \$595 / List Price \$695

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

Online Instructor-Supported Course EL524

From suppliers' shops to construction sites, 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 provides the required skills for applying Code requirements for NDE (nondestructive examination) techniques for radiography, ultrasonic techniques and other forms of NDE. It also outlines the requirements for performing hydro testing and leak testing. Case studies examine real scenarios encountered in the nuclear industry. This advanced course explores the requirements of Section III of the ASME BPV Code.

You Will Learn To

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

22.5 Hours, 2.3 CEUs, 23 PDHs

Member \$595 / List Price \$695

Also available as a 4-day Public Course: PD644, "Advanced Design and Construction of Nuclear Facility Components per ASME Section III" (see page 49)

BPV Code, Section III, Division 1: Class 1 Piping Design

Online Self-Study Course EL542

This course provides information and instruction on the design and construction of nuclear power plant piping systems consistent with ASME Boiler and Pressure Vessel Code (BPV Code), Section III, Division 1, Subsection NB. The course incorporates a brief historical perspective on as well as general overview of the BPV Code. The balance of the course focuses on the appropriate use of BPV Code Section III, Division 1, Subsection NB for the design and construction of Class 1 piping systems.

You Will Learn To

- Describe the overview of the ASME Boiler and Pressure Vessel Code
- Identify Code requirements for Class 1 Piping Design Specifications
- Explain Class 1 Piping Design by Rule (NB-3600)
- Explain Class 1 Piping Design by Analysis (NB-3200)

10 PDHs

Member \$295 / List Price \$395

BPV Code, Section III, Division 1: Class 2 & 3 Piping Design

Online Self-Study Course EL543

This course provides information and instruction on the design and construction of nuclear power plant piping systems and the appropriate use of ASME Boiler and Pressure Vessel Code, Section III, Division 1, Subsection NC and ND with respect to Class 2 & 3 piping systems. While they will be discussed briefly, detailed instruction will not be provided on the design and construction of Class 2 & 3 pipe supports. Participant exercises are provided as an integral part of the training program.

You Will Learn To

- Explain Class 2/3 Piping Design by Rule methods
- Identify Class 2/3 pipe supports design requirements
- Explain selected individual piping component design requirements
- Describe the design of a simple Class 2/3 piping system
- Describe "non-Code" but related nuclear piping design issues

10 PDHs

Member \$295 / List Price \$395

Essentials: BPV Code, Section III, Division 1: Rules For Construction of Nuclear Facility Components

Online Assessment Based Course ZABC20

Introduces the requirements of the BPV Code Section III, Division 1 and covers the general requirements and scope of Division 1, the responsibilities and duties of personnel involved in the construction of a nuclear power plant, quality assurance and certification.

2 PDHs

Price \$195

Risk-Informed Inservice Testing Program

Online Instructor-Supported Course EL527

How to convert a typical IST Program 10-year update to a RI-IST (Risk Informed Inservice Testing) Program that the Nuclear Regulatory Commission will accept and approve is the focus of this course. It provides an overview of the ISTE (the subsection of the code referring to Risk Testing Requirements); an overview of ISTA (General Testing Requirements); program requirements, guidance, and preparation; industry risk-informed initiatives; performance-based initiatives; and several case studies. While designed specifically for the IST engineers working at the plant or IST program regulators with 5 to 10 years of experience in the nuclear industry, new engineers also benefit from the basic information the course provides related to safety systems, standby equipment and application of Probabilistic Risk Assessment Methods (PRA).

You Will Learn To

- Perform Risk Informed-IST 10-year update of the IST program
- Identify RI-IST requirements
- Identify PRA strengths and weaknesses
- Describe the details of current and future regulatory changes affecting RI-IST

22.5 Hours, 2.3 CEUs, 23 PDHs

Member \$595 / List Price \$695

Inservice Testing of Pumps

Online Instructor-Supported Course EL523

This course teaches how to develop a Pump-IST (Inservice Testing) Program that the NRC will accept and approve. It covers the full range of Pump-IST requirements, including general concepts, the scope of Pump-IST, overviews of ISTA and ISTB, pump testing, program preparation, comprehensive pump test, pump vibration, risk-informed initiatives, performance-based initiatives, and two case studies. It focuses specifically on the NRC required 10-year updates of the Pump-IST Program. The course is geared toward IST engineers working at a plant or IST program regulators with 5-10 years' experience in the nuclear industry. It also teaches engineers, who are new to the field, the basics of safety systems and standby equipment.

You Will Learn To

- Explain how to perform ten-year updates of the Pump-IST program
- Identify the latest Pump-IST requirements, including ASME OM Code, Subsection ISTB
- Describe Pump-IST strengths and weaknesses
- Explain details of current and future regulatory changes affecting Pump-IST

22.5 Hours, 2.3 CEUs, 23 PDHs

Member \$595 / List Price \$695

Essentials: ASME/ANS RA-S Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications **NEW!**

Online Assessment Based Course ZABC55

This course introduces the ASME/ANS PRA Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications. This standard sets forth the requirements for probabilistic risk assessments (PRAs) used to support risk-informed decisions for commercial nuclear power plants, and prescribes a method for applying these requirements for specific applications. The course discusses the basis and background of the standard's development, the role of the Joint Committee on Nuclear Risk Management (JCNRM), the contents of the standard, and the use and application of the standard. The course will help you understand how to comply with the standard and meet its requirements.

2 PDHs

Price \$195

Also available in Spanish as ZABC56

Inservice Testing of Valves

Online Instructor-Supported Course EL521

Upon completion of this course, you will be able to develop a Valve-IST (Inservice Testing) Program that complies with all NRC requirements. Following an introduction of the subject matter, it goes into general concepts, scope of Valve-IST, overviews of ISTA and ISTC, program requirements and guidance, valve testing, program preparation, condition-monitoring for valve test, risk-informed initiatives, performance-based initiatives, and two case studies. It highlights NRC-required 10-year updates of the Valve-IST Program. While designed primarily for IST engineers working at a plant or IST program regulators with 5 to 10 years' experience, new engineers in the nuclear industry also learn a lot of the basics related to safety systems and standby equipment.

You Will Learn To

- Explain how to perform ten-year updates of the Valve-IST program
- Identify the specific requirements of the ASME OM Code, Subsection ISTC
- Identify relevant Valve-IST requirements
- Describe the latest thinking on Valve-IST strengths and weaknesses
- Identify current and likely future regulatory changes affecting Valve-IST

22.5 Hours, 2.3 CEUs, 23 PDHs

Member \$595 / List Price \$695

Also available as a 3-day Public Course: PD596, "Developing a 10-Year Valve Inservice Testing Program" (see page 52)

For more information, visit:



go.asme.org/eLearning

eLEARNING

How to Get an “N” Stamp

Online Assessment Based Course ZABC4

This course makes the procedure for obtaining an ASME “N” Stamp easier to understand. The course outlines, defines and explains ASME conformity assessment programs, code requirements, along with the “N” Stamp application procedure covering the accreditation process, survey preparation, demonstration requirements and the most common deficiencies occurring in “N” Stamp applications.

3 PDHs
Price \$295

Essentials: BPV Code, Section V: Nondestructive Examination

Online Assessment Based Course ZABC17

Provides an introduction to the ASME Boiler and Pressure Vessel Code, Section V: Nondestructive Examination (NDE), including the various applications of NDE as well as the various techniques.

3 PDHs
Price \$195

NQA-1, Part 1: 18 QA Requirements

Online Assessment Based Course ZABC5

This course offers an overview of the ASME NQA-1 Nuclear Quality Assurance Standard and an in-depth look at Part I (there are three parts in all). The course material provides descriptions and explanations of how each of the 18 requirements of the standard should be applied, including software design, computer test procedures, the inspection processes, identifying and managing nonconformances, and the control of measuring and test equipment. This course is for engineers, managers and quality personnel who are or will be directly or indirectly involved in manufacturing, fabrication and examination of components or structures for nuclear power facilities.

4 PDHs
Price \$295

NQA-1 Practical Application

Online Assessment Based Course ZABC29

ASME NQA-1, Quality Assurance Requirements for Nuclear Facility Applications contains the quality assurance program requirements for the siting, design, construction, operation and decommissioning of nuclear facilities. Part 1 describes an eighteen-point system for implementing a quality assurance program for these activities. The course describes a practical application of NQA-1 focusing on five of the principal requirements: control of design, procurement documents, purchased items and services, tests and measuring and test equipment. This course is for design, process and quality engineers; managers, management program developers and project managers; licensing and procurement personnel; regulators; and students and university personnel.

4 PDHs
Price \$295

Probabilistic Risk Assessment (PRA) Standard

Online Self-Study Course EL541

This course covers the PRA standard objectives and provides an overview of the PRA Standards Framework. A discussion of the standard's detailed requirements is not included. The course takes approximately two hours to complete.

You Will Learn To

- Explain when the PRA Standard should be applied
- Describe the interaction between technical requirements of the PRA Standard and the applications of PRA
- Explain the implications of PRA Standard compliance

2 PDHs
Member \$195 / List Price \$295

Design of Buried High Density Polyethylene (HDPE) Piping Systems

Online Self-Study Course EL544

This course provides training on the design and analysis of buried high density polyethylene (HDPE) pipe in accordance with the ASME Boiler and Pressure Vessel Code Case N-755. The course covers all aspects of the design of buried HDPE pipe including pressure design, soil loadings, thermal expansion loads and seismic design requirements. The design of coupled buried HDPE and above-ground steel piping systems is also presented. The class includes two in-class piping design exercises as well as a complete set of handouts and identification of applicable reference documents.

You Will Learn To

- Describe the scope of Code Case N-755
- Explain the relationship of Code Case N-755 to ASME B&PVC
- Identify HDPE piping design requirements and analysis methods as specified in Code Case N-755
- Demonstrate calculation methods for soil springs and other need soil parameters
- Describe the design of coupled buried HDPE and above-ground steel piping systems

10 PDHs
Member \$295 / List Price \$395

Also available as a 2-day Public Course: PD617, “Design of Buried High Density Polyethylene (HDPE) Piping Systems” (see page 64)

For more information, visit:



go.asme.org/eLearning

Comparison of Global Assurance and Management Standards Used for Nuclear Application

Online Instructor-Supported Course EL526

This course provides managers, engineers and program developers with a better understanding of the major international Nuclear Quality Assurance Standards and how they interact. Following an introduction to the ASME Section III Nuclear Power Code, the course offers an overview of the ASME NQA-1 Nuclear Quality Assurance Standard, the ISO 9001 Quality Management Standard, and the IAEA GS-R-3 Management Systems Standard. It also compares the NQA-1 Standard with the ISO 9001:2008 and the IAEA GS-R-3 Management Systems Safety Series Standard. The course also provides analysis of the areas of their agreement and differences.

You Will Learn To

- Identify ASME NQA-1 Nuclear Quality Assurance Standard contents and organization
- Provide an overview of International Atomic Energy Agency (IAEA) Safety Standard GS-R-3, 2006-STI/PUB/1252
- Provide an overview of ISO 9001: 2008
- Explain the practical application of these quality assurance requirements for the nuclear industry

15 Hours, 1.5 CEUs, 15 PDHs

Member \$395 / List Price \$495

Also available as a 2-day Public Course: PD634, "Comparison of Global Quality Assurance and Management System Standards Used for Nuclear Applications" (see page 46)

NQA-1 Quality Assurance Requirements for Nuclear Facility Applications

Online Instructor-Supported Course EL520

This online instructor-supported course provides an overall understanding of the basic principles and applications of ASME Nuclear Quality Assurance. Managers, engineers, and program developers who take this course gain an enhanced understanding of ASME as an organization, its codes and standards, and the ASME Nuclear Quality Assurance code and standard NQA-1 as it is applied to nuclear facilities. In addition to covering the NQA-1 Standard, it also provides a brief overview of sections of Section III Rules for Construction of Nuclear Facility Components of the BPV Code as they apply ASME NQA-1 for their quality assurance standard for new construction of nuclear facilities and plant modifications. This course is designed for engineers, managers and quality personnel who are, or will be, directly or indirectly involved in manufacturing, fabrication and examination of components or structures for nuclear power facilities.

You Will Learn To

- Explain the purpose of the NQA-1 Standard and its role in nuclear construction and operation
- Describe the 18 criteria basis of the NQA-1 Standard contained in Part 1
- Describe the organization of the NQA-1 Standard and the major topics (or activities) covered in the standard
- Explain the differences between Parts 1, 2, 3 and 4

15 Hours, 1.5 CEUs, 15 PDHs

Member \$395 / List Price \$495

Essentials: BPV Code, Section XI, Division 1: Rules for Inservice Inspection of Nuclear Plant Components - A Detailed Overview **NEW!**

Online Assessment Based Course ZABC51

This course provides a detailed overview of the contents of the 2010 ASME Boiler and Pressure Vessel Code Section XI, Division 1 and its 2011 Addenda. It covers the organization and the requirements Section XI to help understand how to use it, and introduces the inservice inspection requirements for Class 1, 2 and 3 components, metal containments and liners, supports and concrete containments.

3 PDHs

Price \$195

Essentials: ASME BPV Code Section III: Subsection NCA **NEW!**

Online Assessment Based Course ZABC57

A comprehensive knowledge of the general requirements of Section III requires a familiarity with all the requirements within Subsection NCA. The modules in this course highlight selected requirements - or excerpts of requirements - of significant interest within NCA.

3 PDHs

Price \$195

Essentials: ASME Nuclear Air and Gas Treatment (CONAGT) **NEW!**

Online Assessment Based Course ZABC46

Designed to provide a basic understanding of nuclear air cleaning and ASME's Nuclear Air and Gas Treatment Committee (CONAGT) and Standards, this course introduces ASME's CONAGT Committee, its role in nuclear air and gas cleaning, processing and treatment at nuclear facilities, as well as its publications, including the AG-1 and N511 Standards.

2 PDHs

Price \$195

For more information, visit:



go.asme.org/eLearning

Design and Analysis of Floating Structures*

PD756

Floating structures have enabled drilling and production in the deepest waters of the Gulf of Mexico and elsewhere in the world. The proper design of these platforms is essential for the survival of the risers and the safety of the structures. This course provides an introduction to the fundamentals involved in floating structure design: hydrostatics and stability, hull structure, global design and sizing, mooring, global responses and an overview of structure fabrication, transportation and installation methods. The scope of specific platforms include: semi-submersibles, and FPSO (ship-shaped). The content is based largely upon application of Rule and Recommended Practice-based methods. The use of "first principles" in the design is discussed as well.

Who Should Attend

Naval architects, civil and mechanical engineers interested in learning more about the methods for design and analysis of floating offshore platforms, specifically production and drilling platforms, engineers working on or planning on working on deepwater projects involving risers, moorings and floating structures

Special Requirements

Knowledge of basic fluid mechanics and strength of materials necessary.

Instructors John Halkyard, Steve Perryman

3 Days, 20 PDHs

Vortex Induced Vibrations*

PD751

Flow-induced vibrations have become increasingly important in recent years as designers have used materials to their limits, causing structures to become progressively lighter, more flexible, and prone to vibration. The course describes design and analysis tools available for predicting and preventing vibration of structures with internal and external flows, specifically vortex-induced vibration, and subsequent structural failures.

The course begins a review of vibration theory, fluid mechanics and application of theory to scaling vortex induced vibration testing. It then discusses vortex and vortex shedding theory and Strouhal number, self-excitation, damping and Tacoma-Narrows bridge. Analysis modeling techniques and design for vortex-induced vibration and vortex-induced acoustics are presented. Specific advanced examples are made of heat exchanger vibration, strumming of cables and offshore pipelines and vortex-induced motion of platforms.

Who Should Attend

Professional engineers, technical management and students who are concerned with the tube and pipes in fluid flow, offshore pipelines, drilling risers, off shore platforms, stacks towers and masts found in refinery, petroleum production, heat exchangers and chemical process industries

Instructor Robert Blevins

1 Day, 6.5 PDHs

* For more information about this course, please contact Jennifer Delda, Program Manager, at deldaj@asme.org or +1.212.591.7108.



Become an ASME Mentor



Enhance Your Leadership Skills

ASME Mentors report that they...

- Enjoy feeling helpful and experience more job satisfaction
- Apply their positive experiences to interactions with employees and colleagues
- Have increased their effectiveness as managers
- Feel more valuable to their companies
- Accomplish business goals that they would not have accomplished without their experiences as ASME Mentors
- Understand better how to share information that will potentially have a positive impact on business outcomes

Become an ASME Mentor.
Visit go.asme.org/mentoring

Flow Assurance*

PD729

This course will answer the question "What is flow assurance?" You will also gain an appreciation for the following areas: subsea systems, fluid properties, thermal/hydraulic issues, production chemistry issues, and impact on system design.

Who Should Attend

Anyone who interfaces with flow assurance engineers or who has an interest in becoming a flow assurance engineer.

Instructor Doreen Chin

1 Day, 6.5 PDHs

Fundamentals of Deepwater Project Development*

PD727

Deepwater projects will soon account for an increasing portion of offshore oil and gas supply. Developing deepwater fields entails significant technical and commercial challenges. This course, taught by industry leaders, provides a fundamental understanding of deepwater development planning.

It familiarizes attendees with essential floating platform, subsea and riser technologies that enable safe and profitable extraction of hydrocarbons in deepwater. The course material is designed to serve as a handy reference and guide to deepwater project development.

Who Should Attend

Anyone who wants to understand the fundamentals of deepwater development planning and the key surface facility components that constitute a deepwater project development

Instructors Richard D'Souza, Matt Doan, David Walters

1 Day, 6.5 PDHs

** For more information about this course, please contact Jennifer Delda, Program Manager, at deldaj@asme.org or +1.212.591.7108.*

ASME Book of Interest



Mechanics of Drillstrings and Marine Risers

Don W. Dareing

396 pp ISBN: 9780791859995

Print Book Member \$119 / List Price \$149

Order Number: 859995

Get more information at asme.org

Fundamentals of Deepwater Riser Engineering*

PD728

This course addresses the basic principles and technologies of riser engineering design, fabrication and installation. It also provides in-depth information regarding the primary drivers behind riser system selection for deepwater floating production.

Who Should Attend

This course is designed for subsea, pipeline or riser engineers with 1-5 years of experience and industry professionals who interface with riser engineering

Instructor Kieran Kavanagh

1 Day, 0.8 CEUs

Member \$750 / List Price \$850

Essentials – B31.1 Power Piping ZABC14

Online Assessment Based Course ZABC14

This course covers the jurisdictional limits of the B31.1 Code and the ASME Boiler and Pressure Vessel Code, Section I and design issues specific to power piping systems. This course also reviews the qualification requirements for operators and operating procedures for welders and brazers and nondestructive examination requirements.

2 PDHs

Price \$195

Essentials – B31.3 Process Piping Code

Online Assessment Based Course ZABC15

This course introduces the B31.3 Process Piping Code. Explaining how piping systems function and what the code requirements are for various types of installations is the aim of this course. The B31.3 Code provides guidance and limitations on the selection and application of materials and components; requirements for the fabrication, assembly and erection of piping; and requirements for examination, inspection, and testing of piping.

2 PDHs

Price \$195

** For more information about this course, please contact Jennifer Delda, Program Manager, at deldaj@asme.org or +1.212.591.7108.*

B31.3 Process Piping Design

PD014 ASME STANDARDS COURSE / TOP SELLER

The aim of this intensive four-day course is to explain how piping systems fail and what the Code requires the designer, manufacturer, fabricator, supplier, erector, examiner, inspector and owner to do to prevent this.

Using hundreds of real-world examples as well as the personal experiences of the instructors, the course demonstrates how the B31.3 Code has been both correctly and incorrectly applied. Lessons are enhanced by actual in-class problem solving exercises, directly applying the rules and equations of the B31.3 Code for specific design and operating conditions to illustrate correct applications.

You Will Learn To

- Identify what issues to consider when designing process piping
- Explain the pressure design of piping and piping components
- Analyze piping flexibility and gauge the limitations of piping and piping components
- Identify pipe supports, leak testing, piping failures and their causes

Who Should Attend

Piping engineers and designers who need an understanding of the requirements for compliance and the trends of Code changes for piping design and analysis, fabrication, examination and testing

Special Requirements

Each participant will receive a copy of the *B31.3 Process Piping Design* codebook; however, each must bring his or her own calculator.

Instructors Philip D. Flenner, Ronald W. Haupt, Glynn E. Woods

4 Days, 3 CEUs, 30 PDHs

Member \$2,675 / List Price \$2,875

Save up to \$575 by enrolling in PD581 – a combo course consisting of this course (**PD014**) and **PD457** “B31.3 Process Piping Materials, Fabrication, Examination and Testing.”

B31.3 Process Piping Materials, Fabrication, Examination and Testing

PD457 ASME STANDARDS COURSE

A comprehensive, 1-day supplemental course to PD014: “ASME B31.3 Process Piping Design,” this course is designed to illustrate the relationship of the Fabrication and Examination rules of the B31.3 Code to the Design and Materials rules. Examples of problems that occur as a result of not understanding the relationship of the ASME code to design rules and materials selection are featured. The primary goal of this course is to provide insight into the rules relating to the ASME B31.3 Fabrication and Examination code.

You Will Learn To

- Describe the materials selection process and limitations
- Identify fabrication rules and their bases
- Describe the relationship between B31.3 design and the fabrication and examination requirements
- Explain the welding qualification requirements
- Identify the inspection, examination and testing requirements

Who Should Attend

Piping engineers and designers, fabricators and erectors, QA/QC personnel, engineers and maintenance personnel who desire a more in depth understanding of the Fabrication and Examination rules of the B31.3 Code covering process plant piping systems

Instructor Philip D. Flenner

1 Day 0.8 CEUs, 8 PDHs

Member \$895 / List Price \$995

Save up to \$575 by enrolling in PD581 – a combo course consisting of this course (**PD457**) and **PD014** “B31.3 Process Piping Design.”

Take This Combo Course and Save \$575

B31.3 Process Piping Design, Materials, Fabrication, Examination and Testing Combo Course

PD581 ASME STANDARDS COURSE / TOP SELLER

Created to save participants time and money, this course is a back-to-back offering of “B31.3 Process Piping Design” (**PD014**) and “Process Piping Materials, Fabrication, Examination & Testing” (**PD457**). If you opt to take this combination course, you could **SAVE UP TO \$575**.

Instructors Philip D. Flenner, Ronald W. Haupt, Glynn E. Woods **5 Days, 3.8 CEUs, 38 PDHs** **Member** \$3,195 / List Price \$3,295

B31.1 Power Piping Code

PD013 ASME STANDARDS COURSE

This intensive, five-day course details the latest Power Piping Code requirements – key elements in creating the more effective piping systems today's competitive environment demands. It provides insight into how they have evolved and what future changes may be expected.

Importantly, 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.

Each attendee will receive a copy of the *B31.1 Power Piping* codebook.

You Will Learn To

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

Who Should Attend

Engineers entering the piping design and analysis field; practicing piping engineers requiring background on Code compliance and trends in piping design, analysis and fabrication; piping fabricators and suppliers wishing to understand the relationship of fabrication and manufacture to the design and construction of piping systems; QA/QC personnel

Special Requirements

Attendees are **required** to bring a scientific calculator to the course.

Instructors Philip D. Flenner, Joe Frey, Ronald W. Haupt, Bob Wilson
5 Days, 3.8 CEUs, 38 PDHs
Member \$3,195 / List Price \$3,295

B31 Piping Fabrication and Examination

PD445 ASME STANDARDS COURSE

This course familiarizes participants with the rules of the B31 Code sections (B31.1, B31.3, B31.5, and B31.9), which cover the various Fabrication and Examination rules. The course also stresses the importance of the relationship of the Fabrication and Examination rules to the design of the piping system. The presentation includes case studies of problems that occur as a result of not understanding these rules. Participants leave with insight into the reasons for the creation of the B31.3 Fabrication and Examination rules as well as their applications.

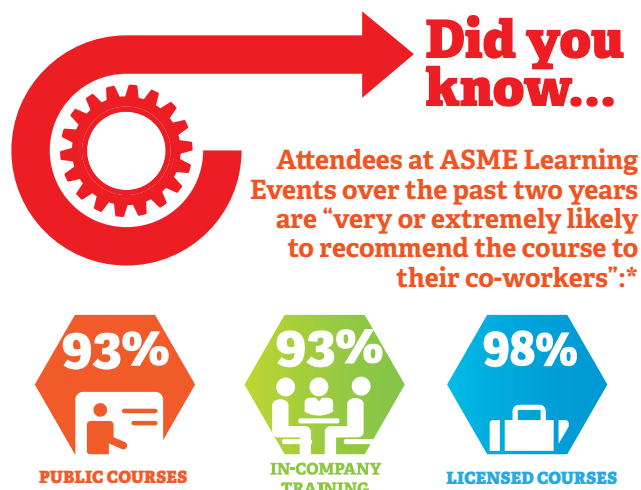
You Will Learn To

- Describe materials selection and limitations
- Explain fabrication rules and their bases
- Explain the differences between the B31 Code Sections
- Identify welding qualification requirements
- Describe inspection, examination, and testing requirements

Who Should Attend

Piping engineers and designers, fabricators and erectors, QA/QC personnel, engineers and maintenance personnel

Instructor Philip D. Flenner
2 Days, 1.5 CEUs, 15 PDHs
Member \$1,625 / List Price \$1,725



See pages 92–95 for dates and locations of ASME Public Courses delivered in the USA during Spring 2016.

* ASME Course Evaluation Survey completed between July 2012 and June 2014 by 6,108 participants

B31.8 Gas Transmission and Distribution Piping Systems

PD370 ASME STANDARDS 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 2½-day course explains the present-day piping Code provisions, the principal intentions of the Code as well as how the Code should be applied, with an emphasis on transmission pipelines.

Each participant will receive a copy of the latest edition ASME codebook, *B31.8 Gas Transmission and Distribution*.

You Will Learn To

- Explain the causes and modes of pipeline failure
- Describe the 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
- Explain the differences between B31.8 and US DOT gas pipeline regulations

Who Should Attend

Engineers, Code compliance personnel, operation and maintenance personnel as well as regulatory personnel

NOTE: This is a 2½-day course. The last day of the course ends around 12:15PM.

Instructor Michael J. Rosenfeld
2.5 Days, 1.9 CEUs, 19 PDHs
Member \$2,073 / List Price \$2,222

ASME B31.4 Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids

PD391 ASME STANDARDS COURSE

Pipelines play a vital role in our economy. Out of sight and usually out of mind, they bring us daily the liquid heating and motor fuels upon which we depend. They draw little public attention until they malfunction and release their contents into the environment.

Pipeline operators have a duty to preserve public safety and the environment. Similarly, responsible employees of a pipeline operator have a duty to thoroughly understand and rigorously adhere to principles of safe pipeline design and operation in order to keep the products flowing and to minimize the chances that any product will ever be released unintentionally into the environment. Basic safe pipelining starts with the ASME B31.4 Code.

This course provides the foundation for properly applying the code in the interest of public and employee safety. Its goal is to familiarize pipeline operating personnel, public safety personnel, and state and federal regulators with the important safety-related aspects of ASME B31.4.

Each participant is provided with a course notebook containing copies of the slides and viewgraphs and a copy of the current edition of the *ASME B31.4 Pipeline Transportation Systems for Liquids and Slurries* codebook.

You Will Learn To

- Describe the basic elements of pipeline design, construction and maintenance
- Explain how to apply principles of safe pipeline design and operation

Who Should Attend

Pipeline designers, pipeline contractors, pipeline operators, public safety officials and government regulators

Instructor Carolyn Kolovich or Michael J. Rosenfeld
2 Days, 1.5 CEUs, 15 PDHs
Member \$1,625 / List Price \$1,725

See pages 92–95 for dates and locations of ASME Public Courses delivered in the USA during Spring 2016.

Layout of Process Piping Systems **NEW!**

PD720

Piping arrangements take up the majority of the work in the design of a process plant. Traditionally, there has been little formal training in the design and location of piping and many design decisions are based on practical considerations without formulae or code reinforcements.

This course discusses the design procedures and practices involved in the location of equipment and layout of the piping systems. It provides attendees with the background and guidance required to design, engineer and complete piping engineering assignments and follow acceptable layout procedures.

Each participant will receive a copy of the book, *"Detail Engineering and Layout of Piping Systems,"* by Bob Wilson.

You Will Learn To

- Describe the procedures involved in the layout and piping of a typical process unit containing pumps, exchangers, horizontal drums and vertical towers
- Explain how disciplines, such as civil, structural, electrical, instrumentation, etc., are relevant to piping design and layout
- Identify maintenance and accessibility requirements of piping and related disciplines
- Explain nozzle orientation procedures
- Identify pipe support requirements
- Describe piping stress analysis techniques
- Identify the latest CAD Techniques for piping layout

Who Should Attend

Engineers and designers entering the plant design field; practicing engineers required to expand their understanding of layout procedures; piping fabricators, contractors and suppliers wishing to understand the relationship of manufacture and fabrication to the design, layout and construction of piping systems; piping design and analysis personnel

Instructor Bob Wilson

3 Days, 2.3 CEUs, 23 PDHs

Member \$1,895 / List Price \$1,995

Take this course (PD720) and "Optimization of Plant Layouts Utilizing 3D CAD/CAE Systems" (PD721) as a combination course, "Layout of Process Piping Systems and Optimization of Plant Layouts Utilizing 3D CAD/CAE Systems Combo Course" (PD686), and save up to \$650.

Optimization of Plant Layouts Utilizing 3D CAD/CAE Systems **NEW!**

PD721

Poor layout and mismanaged 3D CAD/CAE systems have led to gross budget and schedule overruns on many industrial piping projects, all of which can be avoided. This course analyzes common plant and piping layout issues and considers how to manage and utilize such systems efficiently during the detail engineering phase of the project. Efficient utilization of the relational database capabilities of the system will save time and money, as well as assist in the coordination that is required between different engineering disciplines.

Each participant will receive a copy of the book, *Detail Engineering and Layout of Piping Systems,* by Bob Wilson.

You Will Learn To

- Describe how to coordinate plant layout projects between disciplines
- Employ 3D CAD/CAE systems to improve plant layout design and contractibility
- Develop a plant layout design using 3D modeling effectively
- Describe 3D CAD/CAE system deliverables and how they are produced
- Explain how to avoid common plant layout pitfalls
- Explain how to use the latest CAD Techniques for piping layout
- Identify modeling and piping Do's & Don'ts
- Explain how to use modeling steel and pipe supports
- Explain CAD/CAE budgeting and scheduling
- Illustrate how to complete functional and practical equipment and piping layouts through examples and hands-on exercises
- Identify practical solutions amidst challenges that are common to many projects using advanced technology

Who Should Attend

Project engineers managing in any piping project, practicing piping engineers required to expand their understanding of layout procedures, piping fabricators, contractors and suppliers wishing to understand the relationship of manufacture and fabrication to the design, layout and construction of piping systems; piping design and analysis personnel

Instructor Andrew Wolosik

2 Days, 1.5 CEUs, 15 PDHs

Member \$1,450 / List Price \$1,550

Take this course (PD721) and "Layout of Process Piping Systems" (PD720) as a combination course, "Layout of Process Piping Systems and Optimization of Plant Layouts Utilizing 3D CAD/CAE Systems Combo Course" (PD686), and save up to \$650.

Take This Combo Course and Save Up to \$650!

Layout of Process Piping Systems and Optimization of Plant Layouts Utilizing 3D CAD/CAE Systems Combo Course **NEW!**

PD686

Created to save participants time and money, this course (PD686) is a back-to-back offering of "Layout of Process Piping Systems" (PD720) and "Optimization of Plant Layouts Utilizing 3D CAD/CAE Systems" (PD721). If you opt to take this combination course, you could **SAVE UP TO \$650.**

Instructors Bob Wilson and Andrew Wolosik **5 Days, 3.8 CEUs, 38 PDHs** **Member** \$2,775 / List Price \$2,895

Detail Engineering of Piping Systems

PD410

Detail engineering in piping projects consists of the engineering, design, detail and layout of process and utility equipment, piping and instrumentation. This three-day course provides participants with the background required to design, engineer and complete piping assignments.

This course should be of interest to people employed in any area that piping is present (Refinery, Chemical, Power, Pulp and Paper, Utility etc.) The course introduces engineers, designers and construction personnel to the various procedures involved in the development and engineering of Piping and Instrumentation Diagrams (P&ID's), Equipment Plot Plans, Piping Arrangements, and Fabrication Drawings.

Traditionally, there has been little formal training in this area and design decisions often have to be made based on practical considerations without formulae or code reinforcement. Completing piping drawings take up the majority of man-hours in the design of a process plant.

Each participant will receive a copy of the book, *Detail Engineering and Layout of Piping Systems*, by Bob Wilson.

You Will Learn To

- Describe pipe sizing
- Explain pressure drop calculations
- Describe the process of pump and equipment sizing and selection
- Describe the preparation of equipment specifications and drawings
- Identify piping specifications
- Explain the process of instrumentation and process control
- Describe the process of piping component familiarization, including valves and fittings, piping hangers and supports

Who Should Attend

Piping engineering and design personnel; engineers, designers, CAD operators and draftspersons in the piping field; practicing engineers and designers who may have experience in related disciplines and wish to expand their knowledge of the piping area; piping fabricators, contractors and suppliers wishing to understand the relationship of manufacture and fabrication to the design, layout and construction of piping systems

Special Requirements

A series of workshops where attendees have an opportunity to produce a P&ID and a number of Piping Isometrics c/w Bill of Material are part of this course. As a result, attendees are required to bring the following equipment:

- Scale: 3/8" = 1 ft scale
- Circle template
- Calculator
- Drafting pencil and eraser

Instructor Bob Wilson

3 DAYS, 2.3 CEUs, 23 PDHs

Member \$1,895 / List Price \$1,995

Inline Inspections for Pipelines **NEW!**

PD706

From simple beginnings, the use of in-line inspection (ILI) technologies in the pipeline industry has grown significantly during the last two decades. Today, more than ever, there is an understanding between industry and regulators that ILI is a go-to methodology for maintaining pipeline integrity. ILI has given rise to three interested parties, namely regulators, pipeline operators and ILI vendors. This course provides an overview of how these three stakeholders interact from a technical perspective.

ILI is categorized by technology. Various technologies are used, specifically, for finding different defect types. It is the different defect types that lead to pipeline failures that drive the ILI technologies. An understanding of these defect types is the precursor to understanding ILI technologies. This course reviews the defect types and ILI technologies that support the detection and sizing of the various defect types.

ILI Standards exist to assist both pipeline operators and regulators to implement ILI. The course reviews these Standards and other documentation to assist attendees in their role in the implementation of the ILI process.

Finally, the course addresses how to deal with discrepancies between reported and actual defects and anomalies. After taking the course, attendees should understand how and why inspection technologies are selected and used in typical applications. After completing this course, attendees will grasp the fact that the responsibility for "getting it right" (i.e., a pipeline has good integrity) rests with the pipeline operator.

You Will Learn To

- Identify pipeline defect types that cause failure
- Explain why particular ILI technologies should be used for specific defect types
- Explain why or why not ILI is applicable to various defect types
- Identify ILI performance specifications
- Analyze Industry Standards and other documentation on ILI
- Describe whether an ILI was either effective or ineffective
- Explain how to generate confidence in the integrity of a pipeline using ILI

Who Should Attend

Pipeline integrity engineers with limited exposure to in-line inspection and other integrity engineers/supervisors/managers interested in the relative strengths and weaknesses of using ILI technologies to determine and maintain pipeline integrity

Special Requirement

The instructor **requires** that participants bring a laptop with them to class.

Instructor Dyke Hicks

2 Days, 1.5 CEUs, 15 PDHs

Member \$1,450 / List Price \$1,550

Grade 91 and Other Creep Strength Enhanced Ferritic Steels

PD621

The push toward higher efficiencies in power and process plants has resulted in a significant increase in the application of CSEF (Creep Strength Enhanced Ferritic) steels in high temperature services.

These steels differ from “traditional” code material in that they gain their exceptional high temperature creep rupture properties based on a specific condition of microstructure, rather than the primary chemical composition of the materials. This means that the manufacturing and fabrication processes must be controlled carefully to ensure that the appropriate microstructure is achieved, failing which the material will suffer a significant reduction in creep strength properties.

This course brings attendees up to speed on the specific requirements for the CSEF steels; specifically, how adequate properties can be achieved and controlled.

You Will Learn To

- Explain the history and background of CSEF Steels
- Describe the metallurgy of Grade 91 and other CSEF Steels
- Explain design benefits
- Describe failure histories
- Explain manufacturing and fabrication processes
- Identify Welding and PWHT (postweld heat treatment)
- Describe Inspection and Assessment Approaches

Who Should Attend

Design, materials, and mechanical engineers, QC and inspection personnel, construction supervision, maintenance engineers, welding engineers, regulatory personnel

Special Requirements

Participants should have at least one year of experience in the design, materials, fabrication, maintenance or Quality Control aspects of high temperature boiler and pipe applications.

Instructor Jeff Henry

3 Days, 2.3 CEUs, 23 PDHs

Member \$1,895 / List Price \$1,995

Failure Prevention, Repair and Life Extension of Piping, Vessels and Tanks

PD077 ASME STANDARDS COURSE

Purchasing, fabricating, maintaining and repairing equipment at the lowest possible cost while assuring non-failure is always a priority. The causes of damage and failure of piping, vessels, and tanks are described throughout the course as well as how to prevent these incidents. The risk-based inspection planning process and inspection techniques for operating equipment are reviewed.

Practical case studies and course material are used to illustrate how one should apply the ASME Post-Construction and Fitness-for-Service codes to evaluate inspection results and understand the technical basis and techniques for making run-or-repair decisions to prevent failures of degraded equipment. Participants are taught how to select the cost-effective and technically valid repair options, as well as their implementation (design of the repair, field construction, examination, pressure or leak testing).

Participants will receive the textbook, *Fitness for Service & Integrity of Piping Vessels and Tanks* by George Antaki, and the codebook, *PCC-2 Repair of Pressure Equipment and Piping*.

You Will Learn To

- Detect types and causes of failures
- Identify the differences between design code margins and fitness-for-service margins
- Make run-or-repair fitness-for-service decisions
- Explain the requirements of post-construction codes using the guidance obtained in this course
- Explain how to make the right decision on equipment life extension
- Analyze financial and technical considerations before you repair or replace equipment
- Review repair options and techniques in accordance with ASME PCC-2

Who Should Attend

Operators, manufacturers, design engineers, maintenance engineers and inspectors involved in repair of alterations of pressure vessels, boilers, piping and tanks

Instructor George Antaki

3 Days, 2.3 CEUs, 23 PDHs

Member \$2,150 / List Price \$2,250

See pages 92–95 for dates and locations of ASME Public Courses delivered in the USA during Spring 2016.

FRP Pressure Piping Construction Processes

PD593

This class covers the entire FRP (fiber reinforced polymer) pressure piping construction process, including material selection, system and component design, component fabrication, plant/facility erection, inspection, examination and testing. The use of FRP Pressure Piping has been expanding throughout the world due to its superior performance characteristics in specific applications poorly suitable to metallic piping. ASME has decided to move the FRP Pressure Piping requirements from the various ASME B31 Piping Codes to the ASME NM-2 Standard. Additionally, it addresses the application of Bonding Procedure Specifications (BPS) required by B31 codes and the qualifications for people, material and the procedure.

You Will Learn To

- Describe the various aspects of the FRP Pressure Piping Construction Process
- Develop or use FRP Pressure Piping procurement specification
- Define typical problem areas and solutions to avoid the problem
- Explain how to apply the ASME NM-2 Standard (and ASME B31 Code) requirements to various typical industry applications.

Who Should Attend

Design, procurement, erection and startup engineers responsible for FRP pressure piping

Instructor Wes Rowley

2 DAYS, 1.5 CEUs, 15 PDHs

Member \$1,450 / List Price \$1,550

Also available as online, instructor-supported Course, "FRP Piping Fabrication and Installation Proces." **EL522**.

See pages 92–95 for dates and locations of ASME Public Courses delivered in the USA during Spring 2016.

Post Weld Treatments in ASME Codes **NEW!**

PD766

It is essential to understand how materials respond to the rapid thermal cycle that occurs during most welding operations as well as the resulting properties in the weldments. These properties are directly related to the material composition and microstructure, the welding process, the weld filler metal, and even the welding techniques used. To be successful, the ferritic (iron-based) materials commonly used in the pressure containing applications of the ASME Codes may require significant differences in the preheating and Post Weld Heat Treatment (PWHT) requirements. This course provides the information necessary to understand and implement these requirements. It covers the rules for weld preheating, post weld heat treatment, post bending heat treatments (PBHT) and the use of material heat treatments.

The course begins with the basics of welding metallurgy and the reaction to heat treatments. It then provides the background information needed to make decisions concerning the technical needs and the Code requirements for heat treatment. The course also discusses the ASME Code rules addressing preheating, PWHT and PBHT to highlight the differences between ASME Code requirements and the current efforts to ensure consistency. The covered Codes include:

- **ASME Section I**, Power Boilers
- **ASME Section III**, Nuclear Power Plant Components
- **ASME Section VIII**, Pressure Vessels
- **ASME Section IX**, Welding, Brazing, and Fusing Qualifications
- **ASME B31.1**, Power Piping
- **ASME B31.3**, Process Piping

The control of the preheating and PWHT is particularly important to the newer materials that are required for high temperature applications. The concerns and the prevention of problems for the control of preheating and of furnace and local PWHT will also be discussed.

In-class exercises and a short workshop will be used to reinforce the heat treatment, preheat and PWHT requirements.

You Will Learn To

- Explain the metallurgical effects of heat treatment, including PWHT, PBHT, and materials heat treatments
- Describe the effects of welding fabrication preheating and PWHT on the properties of the completed product
- Explain ASME Code requirements for preheating and PWHT
- Explain the requirements for PBHT in the Codes
- Describe the controls needed for effective heat treatments

Who Should Attend

Pressure equipment (boilers, pressure vessels and piping) engineers and designers, fabricators and erectors, welding foremen, welding engineers, corrosion engineers, QA/QC personnel, maintenance supervisors and engineers, as well as regulatory and insurance staff

Instructor Philip D. Flenner

2 Days, 1.5 CEUs, 15 PDHs

Member \$1,625 / List Price \$1,725

Bases and Application of Piping Flexibility Analysis to ASME B31 Code

MC110 MasterClass Series/ASME STANDARDS COURSE

The rules of B31.1 and B31.3 have considerations that can have a significant impact on the design of systems and associated equipment. This interactive two-day MasterClass will provide a thorough insight into the history and bases for the rules for piping design. The program will provide a review of the detailed design procedures and a thorough explanation of the significant assumptions and available options. Through both presentation and discussion, attendees will gain a greater appreciation and understanding of how these assumptions and options can impact their designs.

The class will include detailed example problems that demonstrate, for “real world” piping, how the rules are to be applied and how the options can influence the final design. Examples will be reviewed showing how outputs from computer analysis can be broken down into understandable pieces and verified that the results are consistent with the actual behavior of the piping system.

You Will Learn To

- Define the analytical basis of piping design rules contained in either the ASME B31.1 Power Piping Code or ASME B31.3 Process Piping Code
- Evaluate the significance of the modeling assumptions and how they affect the final design
- Apply the step-by-step design logic for reviewing stress analysis outputs and understanding how to locate and resolve problems
- Interpret the significance of the calculated stresses and the importance of stress categories

Who Should Attend

Piping engineers/designers, developers of piping analysis design software, as well as managers/supervisors of piping design activities

Special Requirements

This MasterClass is structured on the assumption that participants have a basic understanding of ASME B31.1 or B31.3 Piping Codes.

Participants are encouraged to bring examples of particularly challenging issues encountered on the job for in-class discussion.

2 Days, 1.5 CEUs, 15 PDHs

Piping Vibration Courses and Remedies – A Practical Approach

MC111 MasterClass Series/ASME STANDARDS COURSE

This two-day MasterClass provides a foundation of knowledge necessary for those responsible for assuring the mechanical integrity of existing piping systems, as well as those responsible for designing and constructing new piping systems. The program presents background on fundamental causes of piping vibration and describes how to identify sources of vibration. Rules of thumb and simplified methods for evaluating vibration severity, as well as methods of treatment are discussed. A wide variety of causes of vibration will be explored in detail in order to enable the participant to properly evaluate the variety of piping vibration problems that can occur in piping systems.

Participants are encouraged to bring examples of troublesome vibration problems they have experienced or are experiencing for class discussion.

You Will Learn To

- Identify the probable causes of piping vibration
- Determine if vibration is likely to be excessive
- Recommend methods to correct the problem if the vibration is excessive

Who Should Attend

Engineers, senior designers, maintenance, quality assurance, inspection and manufacturing personnel who work with process piping (e.g., in the chemical, petroleum, plastic processing, pulp and paper fields)

Special Requirements

This Master Class is structured on the assumption that participants have a basic understanding of at least one of the ASME B31 piping codes

Participants are encouraged to bring examples of particularly challenging issues encountered on the job for in-class discussion.

2 Days, 1.5 CEUs, 15 PDHs



MASTERCLASS INSTRUCTOR

Jim E. Meyer, Principal/Lead Engineer, Louis Perry Group and Chair, ASME B31 Pressure Piping Committee. Jim is a recognized expert with 40 years of experience in refining petrochemical, chemical, power generation and industrial facilities. Jim has been involved in the ASME B31.1 and ASME B31.3 Section committees for over 35 years and is current Chair of the B31 Standards Committee.



MASTERCLASS INSTRUCTOR

Don Frikken, Senior Advisor, Becht Engineering; Member and Past-Chair of ASME B31 Pressure Piping Committee. Don is an internationally recognized authority in piping design and has received numerous awards including the ASME Melvin R. Green Codes and Standards Medal, which recognizes outstanding contributions in ASME Code development.

Piping Failures – Causes and Prevention

MC117 MasterClass Series/ASME STANDARDS COURSE

This one-day MasterClass provides a practical examination of the fundamental causes of piping failures and describes how the failures could have been prevented. A wide variety of failures are discussed, and include mechanisms such as fatigue, overload, corrosion and others. Mistakes made during design, construction, operation, maintenance and inspection are reviewed in detail.

Sessions are focused on real-world examples and case studies, with active class discussion and analysis.

You Will Learn To

- Identify the probable causes of piping failures
- Recommend methods to correct future similar failures

Who Should Attend

Engineers, senior designers, maintenance, quality assurance, inspection and manufacturing personnel who work with process piping (e.g., in the chemical, petroleum, plastic processing, pulp and paper fields) will find this MasterClass an essential resource and time-saving means to gain an understanding of piping failures and remedies

Special Requirements

This Master Class is structured on the assumption that participants have a basic understanding of at least one of the ASME B31 piping codes.

Participants are encouraged to bring examples of troublesome failures they have experienced or are experiencing for class discussion.

1 Day, 0.8 CEUs, 8 PDHS



MASTERCLASS INSTRUCTOR

Don Frikken, Senior Advisor, Becht Engineering; Member and Past-Chair of ASME B31 Pressure Piping Committee. Don is an internationally recognized authority in piping design and has received numerous awards including the ASME Melvin R. Green Codes and Standards Medal, which recognizes outstanding contributions in ASME Code development.

Bases and Application of Design Requirements for High Pressure Vessels in Section VIII Division 3 of the ASME Boiler and Pressure Vessel Code **NEW!**

MC127 MasterClass Series/ASME STANDARDS COURSE

This two-day MasterClass provides an overview of the design methodology and philosophy of ASME Section VIII Division 3, Alternative Rules for High Pressure Vessels, which incorporates an overview of the analysis methods used, including the application of FEA, to meet the requirements of the Code.

Examples of practical applications for many of the techniques are discussed to demonstrate the philosophy of the Code criteria. This includes an overview of the problems presented in ASME PTB-5-2013 and the ASME Section VIII Division 3 Example Problem Manual. Detailed scenarios are examined to illustrate how the analytical techniques are applied, and their respective limitations. An overview of key elements of the materials, fabrication sections, along with a review of special construction techniques and an overview of fatigue calculations and life assessment are also included in the discussion.

You Will Learn To

- Identify the probable causes of piping vibration
- Determine if vibration is likely to be excessive
- Recommend methods to correct the problem if the vibration is excessive

Who Should Attend

Engineers, senior designers, maintenance, quality assurance, inspection and manufacturing personnel who work with process piping (e.g., in the chemical, petroleum, plastic processing, pulp and paper fields)

Special Requirements

This Master Class is structured on the assumption that participants have a basic understanding of at least one of the ASME B31 piping codes

Participants are encouraged to bring examples of particularly challenging issues encountered on the job for in-class discussion.

2 Days, 1.5 CEUs, 15 PDHS



MASTERCLASS INSTRUCTOR

Daniel T. Peters, PE, is an internationally recognized expert in the design and analysis of pressure equipment and pressure vessels, specializing in high-pressure equipment. He is currently an Associate with Structural Integrity Associates, Inc. and works in the area of pressure vessel and piping design, analysis, fitness for service and asset management. He is a past Chair of the ASME Pressure Vessel and Piping Division's High Pressure Technology Committee and the Pressure Vessels and Piping Division. He has authored or coauthored several papers in this area.

Run-or-Repair Operability Decisions for Pressure Equipment and Piping Systems **NEW!**

MC132 MasterClass Series/ASME STANDARDS COURSE

This two-day MasterClass provides an in-depth review of the rules and application of the ASME, NBIC and API codes and standards in making run-or-repair operability decisions for pressure equipment (tanks, vessels) and piping and tubing systems. The class is based on a series of Case Studies of abnormal and damaged conditions, how to diagnose their cause, how to determine the integrity of the system or component, how to decide whether to keep the system or component in service, and how to repair and prevent recurrence. In making these assessments, we will discuss what guidance is available in ASME B&PV, ASME B31, ASME Post-Construction Codes, API 579, NBIC, and regulations; as well as what is not addressed in codes, standards and regulations, and is therefore at the discretion of the engineer.

You Will Learn To

- Distinguish which parts of run-or-repair operability decisions are addressed in ASME-API-NBIC codes and standards; and which parts are at the discretion of the engineer
- Apply basic run-or-repair principles to diagnose the cause of damage or abnormal condition, and know what simplified and advanced methods and criteria are available for their analysis
- Identify the criteria used for making operability decisions for several types of generic damage mechanisms, including fatigue, pitting, corrosion, cracking, overload, leaks, and component support failures

Who Should Attend

Plant staff engineers, designers, project engineers, maintenance engineers, inspectors, and regulators who desire a practical roadmap for making run-or-repair and operability decisions based on the sound application of ASME codes and standards, regulations, and engineering practice

Special Requirements

This MasterClass is structured on the assumption that participants have a basic knowledge of ASME Pressure Vessel Codes & Standards.

Participants are encouraged to bring examples of particularly challenging issues encountered on the job for in-class discussion.

2 Days, 1.5 CEUs, 15 PDHS

Developing Effective Bolted Flange Joint Assembly Procedures Using ASME PCC-1 **NEW!**

MC136 MasterClass Series/ASME STANDARDS COURSE

This two-day MasterClass provides an in-depth review of the guidelines contained in ASME PCC-1 that are essential elements in achieving a high level of leak tightness integrity of otherwise properly designed and constructed bolted flange joint assemblies. This information may be used in the development of effective joint assembly procedures for the broad range of sizes and service conditions normally encountered in industry.

This includes an overview of the basic fundamentals of bolted joint assembly, including the recent developments of uniform criteria for training and qualifying bolted joint assembly personnel, alternatives to the traditional (legacy) assembly patterns and load increment steps, and guidance in determining the most optimal assembly bolt stress.

You Will Learn To

- Use the guidelines in ASME PCC-1 to develop effective bolted joint assembly procedures
- Evaluate and apply updated joint assembly patterns/ bolt load increment combinations that are more efficient than the traditional legacy methods
- Determine the most optimal assembly bolt loads considering each aspect of joint integrity
- Use the guidance on troubleshooting to investigate and diagnose flange joint leakage incidents

Who Should Attend

Individuals who have a role in improving the integrity of bolted joints in process facilities, either by developing or reviewing assembly procedures or by troubleshooting leakage incidents. This may include those who work for owner-users, manufacturing, engineering and design firms, as well as contractors who write and/or execute bolting procedures

Special Requirements

This MasterClass is structured on the assumption that participants have a basic understanding of ASME PCC-1.

Participants are encouraged to bring examples of real issues they have experienced or are experiencing for class discussion.

2 Days, 1.5 CEUs, 15 PDHS



MASTERCLASS INSTRUCTOR

George Antaki, P.E., is a fellow of the ASME, with over 40 years of experience in pressure equipment. He is internationally recognized for his expertise in design, analysis, and fitness-for-service evaluation of pressure equipment and piping systems. He is the chair of ASME B31 Mechanical Design Committee, chair of ASME III Working Group Piping Design, member of the ASME III Subgroup Component Design, and ASME Operation and Maintenance Subgroup Piping.



MASTERCLASS INSTRUCTOR

Clay D. Rodery, PE, is pressure equipment technical authority with BP, and has over 34 years of experience in the refining, chemicals and upstream engineering functions providing pressure equipment services including design, maintenance, inspection, and development and maintenance of codes, standards and specifications. He is the current chair of the ASME Post Construction Subcommittee on Flange Joint Assembly.

Creating and Implementing Effective Inspection Plans for Pressure Equipment and High Energy Piping Systems using ASME PCC-3

MC137 MasterClass Series/ASME STANDARDS COURSE

This one-day MasterClass provides an overview of the methodology and philosophy of ASME PCC-3, Inspection Planning Using Risk-Based Methods, and includes guidance on the development of an effective and technically rigorous inspection plan for boilers, pressure vessels, heat exchangers, piping and piping components, pipelines, and storage vessels.

Examples of practical applications for the steps involved in creating a risk-based inspection plan are discussed to demonstrate the philosophy of the guideline. Detailed scenarios are used to illustrate how the various stages of an analysis are applied, and their respective limitations. An overview of determining the probability of failure and consequence of failure and the selection of level of risk analysis are included in the discussion.

You Will Learn To

- Explain the use of Risk for engineering applications
- Define a comprehensive list of equipment to be covered in an Inspection Program
- Identify plausible failure mechanisms and associated consequence scenarios
- Calculate Probability of Failure, Consequence of Failure, and Risk
- Select proper inspection technologies
- Create inspection schedules
- Develop mitigation strategies

Who Should Attend

Plant engineers, maintenance engineers, and inspectors involved in the inspection and maintenance of piping, pressure vessels, and other critical plant equipment engineers in the refining, petrochemical, and power generation industries

1 Day, 0.8 CEUs, 8 PDHS



MASTERCLASS INSTRUCTOR

John L. Arnold, PE, is the founder of Niantic Bay Engineering, LLC, and is an internationally recognized expert in the assessment of boilers, pressure equipment and high-energy piping. He is a member of the Post Construction Subcommittee on Inspection Planning as well as the Committee on Power Boilers (BPV, I) and is the Chair of the Subgroup on Fabrication and Examination for BPV I.

SAVE THE DATE!

ASME Pipeline Technology and Standards Training ... a five-day training event

April 11-15, 2016, Denver, Colorado, USA

Learn directly from Pipeline experts and ASME Code leaders as they discuss best practice standards and practical ways to address real world design and safety issues.

The training event will consist multiple courses, including:

- Pipeline Design and Construction
- **NEW!** Managing Stress Corrosion Cracking in an Integrity Management Program for Pipelines
- **NEW!** Pipeline Risk Management Using ASME B31.8S Standard
- **NEW!** Pipeline Integrity Issues, Mitigation, Prevention and Repair Using ASME B31.8S Standard
- **NEW!** Integrity and Repair of Process Piping and Tanks
- ASME B31.4 and B31.8, Liquids and Gas Pipelines
- ASME B31.3 Process Piping Code
- Bolted Joint Assembly Principles Per PCC-1-2013

...plus more to be announced

For more details and the latest course information, visit: go.asme.org/masterclass

**or contact Jennifer Delda at:
deldaj@asme.org**

Assessment Based Courses



Announcing Six New ASME Online Assessment Based Courses for the Spring

ASME'S Online Assessment Based Courses (ABC) are topical, short-length eLearning programs offering PDHs covering a wide range of topics – from B31.3 and pressure equipment to technical writing skills and ethics.

Each self-paced and highly affordable Web-based ABC training course features:

- Convenient self-study modules
- Multimedia files with audio commentary and review questions
- End-of-module assessment tests
- ASME certificate and professional development hours (PDHs)

Check Out These New ASME ABC Courses ►

The American Society of Mechanical Engineers (ASME)

ASME B46.1-2009 – Introduction to Surface Texture Measurement and Analysis NEW! ZABC39

2 PDHs Price: \$195

For manufacturing and quality personnel within the automotive and aerospace industries; electronics industries; those that manufacture hard disk drives, tape drives, and MEMs; medical industry personnel that build artificial joints; others interested in surface metrology

ASME MFC-5.3 - 2013 - Using Doppler Ultrasonic Flowmeters NEW! ZABC65

2 PDHs Price: \$195

Beneficial to new engineers, university students and others interested in learning about the measurement of liquid flow in closed conduits using doppler ultrasonic flowmeters

Essentials - PTC 46 Overall Plant Performance NEW! ZABC68

2 PDHs Price: \$195

For engineers who want an introduction to and a basic understanding of explicit methods and procedures for combined cycle power plants and for most gas, liquid and solid fueled Rankine cycle plants

Guide to Mobile Crane Standards NEW! ZABC54

2 PDHs Price: \$195

For manufacturers, owners, or users of mobile cranes to help determine which standards should be invoked for a particular application or facility

Your Career as a Mechanical Engineer: 5 Things You Should Know NEW! ZABC71

2 PDHs Price: ~~\$195~~ **FREE** (see asme.org for details)

For people who are planning or pursuing a career in the field of mechanical engineering; new engineers; university students, others

Essentials - ASME Y14.1/Y14.2/Y14.3 NEW! ZABC74

2 PDHs Price: \$195

For engineering, designing, drafting, quality control, procurement, tooling, production, purchasing, manufacturing, CAD inspection and shop personnel and others who want to learn more about ASME's guidelines for engineering drawing sheet layout or the Y14 standards

Get more information | go.asme.org/ABC | Or scan with a smart device



eLEARNING

FRP Piping Fabrication and Installation Processes

Online Instructor-Supported Course EL522

This course covers the application of Bonding Procedure Specifications (BPS) required by B31 codes. It covers the qualifications for people, material and the procedure.

You Will Learn To

- Describe FRP (Fiberglass Reinforced Plastic) piping fabrication and installation processes
- Define typical problem areas and what can be done to avoid problems
- Apply the ASME B31 Code requirements to the Flue Gas Desulfurization System installation application

22.5 Hours, 2.3 CEUs, 23 PDHs

Member \$595 / List Price \$695

Also available as a 2-day Public Course: **PD593**, "FRP Pressure Piping Construction Processes" (see page 65)

Hydraulic Design of Liquid or Water Piping Systems

Online Self-Study Course EL539

This course covers the basic fundamentals and flow equations used for sizing flow lines or solving the line pressure drop of steady-state simple hydraulic systems flowing non-flashing incompressible Newtonian liquids or water. Industry's generally accepted fundamental Darcy's equation and the empirical Hazen-Williams formula for water flows are introduced as the models of calculating the frictional pressure drop. Explicit equations between pipe pressure drop and parameters such as pipe inside diameter, fluid's flowing velocity or flow rate and pipe run length are also provided in order for the participants to gain insight of their direct relationship. Working equations provided in this course allow participants to effectively perform hydraulic analysis and evaluate design options of de-bottlenecking their piping or flow line infrastructure for future service requirement.

You Will Learn To

- Explain the basic principles that governs the fluid flow in pipes
- Perform calculations for various aspects of piping systems
- Describe pressure drop and flow resistance
- Describe the process for pipe selection

10 PDHs

Member \$295 List Price: \$395

Essentials: B31.3 Process Piping Code

Online Assessment Based Course ZABC15

This course explains how piping systems function and what the code requirements are for various types of piping installations, including guidance and limitations on the selection and application of materials and components. Also covered are requirements for fabrication, assembly, inspection, examination and testing, as well as special types of piping.

2 PDHs

Price \$195

Design of Buried High Density Polyethylene (HDPE) Piping Systems

Online Self-Study Course EL544

This course provides training on the design and analysis of buried high density polyethylene (HDPE) pipe in accordance with the ASME Boiler and Pressure Vessel Code Case N-755. The course covers all aspects of the design of buried HDPE pipe including pressure design, soil loadings, thermal expansion loads and seismic design requirements. The design of coupled buried HDPE and above ground steel piping systems is also presented. The class includes in-class piping design exercises as well as a complete set of handouts and identification of applicable reference documents.

You Will Learn To

- Describe the scope of Code Case N-755
- Explain the relationship of Code Case N-755 to ASME B&PVC
- Identify HDPE piping design requirements and analysis methods as specified in Code Case N-755
- Demonstrate calculation methods for soil springs and other needed soil parameters
- Describe the design of coupled buried HDPE and above-ground steel piping systems

10 PDHs

Member \$295 / List Price: \$395

Also available as a 2-day Public Course: **PD617**, "Design of Buried High Density Polyethylene (HDPE) Piping Systems" (see page 64)

BPV Code, Section III, Division 1: Class 1 Piping Design

Online Self-Study Course EL542

This course provides information and instruction on the design and construction of nuclear power plant piping systems consistent with the ASME Boiler and Pressure Vessel Code (BPV Code), Section III, Division 1, Subsection NB. The course incorporates a brief historical perspective on as well as general overview of the BPV Code. The balance of the course focuses on the appropriate use of BPV Code Section III, Division 1, Subsection NB for the design and construction of Class 1 piping systems.

You Will Learn To

- Describe the overview of the ASME Boiler and Pressure Vessel Code
- Identify Code requirements for Class 1 Piping Design Specifications
- Explain Class 1 Piping Design by Rule (NB-3600)
- Explain Class 1 Piping Design by Analysis (NB-3200)

10 PDHs

Member \$295 / List Price \$395

BPV Code, Section III, Division 1: Class 2 & 3 Piping Design

Online Self-Study Course EL543

This course provides information and instruction on the design and construction of nuclear power plant piping systems and the appropriate use of ASME Boiler and Pressure Vessel Code, Section III, Division 2 & 3, Subsection NC and ND with respect to Class 2 & 3 piping systems. While they will be discussed briefly, detailed instruction will not be provided on the design and construction of Class 2 & 3 pipe supports. Participant exercises are provided as an integral part of the training program.

You Will Learn To

- Explain Class 2/3 Piping Design by Rule methods
- Identify Class 2/3 pipe supports design requirements
- Explain selected individual piping component design requirements
- Describe the design of a simple Class 2/3 piping system
- Describe “non-Code” but related nuclear piping design issues

10 PDHs

Member \$295 / List Price: \$395

Essentials: B31.8 Gas Transmission and Distribution Piping Systems

Online Assessment Based Course ZABC12

This course introduces the requirements and scope of B31.8, including its history, the types of systems to which it applies, the organization and intended use of the Codebook as well as the requirements for pipeline materials and equipment, welding and design, installation and testing of pipeline systems.

2 PDHs

Price \$195

Essentials: B31.1 Power Piping

Online Assessment Based Course ZABC14

This course introduces the B31.1 Power Piping code and discusses its relationship with BPV Code, Section I: Rules for Construction of Power Boilers and the requirements for design, fabrication and testing. It covers the jurisdictional limits of the B31.1 code and the ASME Boiler and Pressure Vessel Code, Section I and design issues specific to power piping systems. Also reviewed are qualification requirements for operators and operating procedures for welders and brazers, along with nondestructive examination requirements.

2 PDHs

Price \$195

Essentials: B31.4 Pipeline Transportation Systems for Liquids and Slurries **NEW!**

Online Assessment Based Course ZABC50

This course provides an introduction to the different parts of the ASME B31.4 Standard. The B31.4 Standard establishes requirements for safe design, construction, inspection, testing, operation and maintenance of liquid pipeline systems. It was the first code to be published separately for oil transportation piping. Assessing pipeline integrity is an essential part of this Code to ensure the safe transportation of liquids, such as gas and slurries.

This course covers the requirements for constructing, assembling and inspecting pipelines.

2 PDHs

Price \$195

Essentials: PCC-2 Repair of Pressure Equipment and Piping

Online Assessment Based Course ZABC59

This course covers an overview the contents of ASME's PCC-2 Standard. This includes an introduction to the repair of pressure equipment and piping and how it is applicable in the engineering world; the general methods of repair, including welded repairs, mechanical repairs, nonmetallic repairs, and bonded repairs; and specific methods of repair, including butt-welded insert plates in pressure components, full encirclement steel reinforcing sleeves for piping, freeze plugs and nonmetallic composite repair systems.

3 PDHs

Price \$195

For more information, visit:



go.asme.org/eLearning

Process Safety and Risk Management for Mechanical Engineers **NEW!**

PD702

This course covers Process Safety, Risk Understanding and Management (PSM) principles, and the value of performance beyond regulatory requirements. It also covers the overall benefits of an effective PSM and Risk Management program, plant and companywide. This course includes topics (that engineers and supervisory personnel need to know) about process safety regulatory compliance, actual implementation of appropriate programs and procedures, and auditing for compliance and effectiveness.

Participants learn why past process safety failures occurred and of the need for effective process safety programs in "today's and "tomorrow's" worlds. In doing so, it assists each student in understanding why and how such programs should be instituted in their particular work environments and the part each of them should and must play for the programs to be implemented and maintained at peak performance. That is, participants learn how to Walk the Talk and establish their roles in setting the facility's culture. Participants also gain insight through lecture, discussions, and problem solving workshops that will assist in implementing and/or evaluating/auditing a process safety and Risk Management program in your company or facility.

This course uses the OSHA PSM regulation 29CFR1910.119 as a guidance document for requirements and "mentions" the EPA Prevention Program process safety regulatory requirements only when the differences from the OSHA regulation are "significant." After taking this course, participants should feel confident that they will be able to prevent or mitigate disasters related to process safety and risk management.

Each participant will receive the textbook, *Guidelines for Risk Based Process Safety*, (published by Wiley for AIChE's Center for Chemical Process Safety).

You Will Learn To

- Describe how to meet the requirements of OSHA PSM Standard 29CFR 1910.119
- Identify the significant differences (from OSHA) in the EPA Prevention Program 40CFR Chapter 1, Part 68 process safety regulatory requirements
- Explain the part individuals and groups play in setting the "Culture" of process safety management and risk evaluation and decision-making in the day-to-day "real world"
- Describe what a Mechanical Engineer is expected to do to ensure that Process Safety Management programs and Risk Management concepts are put into effect in his or her company and/or facility
- Explain how to apply Recognized And Generally Accepted Good Engineering Practices (RAGAGEP) in implementing an effective and compliant PSM and Risk Management program

Who Should Attend

Engineers from a variety of disciplines including new and experienced front line mechanical engineers responsible for design, maintenance, manufacturing or supervision; managers and engineers responsible for regulatory compliance, auditors (for regulatory and/or company policy compliance); insurance inspectors; compliance program managers and engineers; as well as plant managers and department managers along with corporate process safety support staff

Instructor Adrian L. Sepeda

3 Days, 2.3 CEUs, 23 PDHs

Member \$1,895 / List Price \$1,995

ASME Books of Interest

Companion Guide to the ASME Boiler and Pressure Vessel and Piping Codes, Fourth Edition - Volume 1

K.R. Rao

900 pp ISBN: 9780791859865

Print Book Member \$287.00 / List price \$359.00

Order Number: 859865

Companion Guide to the ASME Boiler and Pressure Vessel and Piping Codes, Fourth Edition - Volume 2

K.R. Rao

900 pp ISBN: 9780791859872

Print Book Member \$287 / List price \$359

Order Number: 859872

Containment Structures of U.S. Nuclear Power Plants

Hansraj Ashar

180 pp ISBN: 9780791860175

Member \$149 / List price \$199

Order Number: 860175

Design and Analysis of ASME Boiler and Pressure Vessel Components in the Creep Range

Maan H. Jawad and Robert I. Jetter

240 pp ISBN: 9780791802847

Print Book Member \$72 / List price \$90

Order Number: 802847

Digital Book List price \$90

Order Number: 80284Q

Development of Reliability-Based Load and Resistance Factor Design (LRFD) Methods for Piping

Prepared by the ASME Special Working Group on Probabilistic Methods in Design Endorsed by ASME Boiler & Pressure Vessel Code Committees ASME Research Committee on Risk Technology

180 pp ISBN: 0-7918-0262-0

Member \$48.59 / List price \$61

Order Number: 802620

Geometric Dimensioning and Tolerancing Handbook: Applications, Analysis and Measurement (GDT-HDBK - 2009)

James D. Meadows

560 pp ISBN: 9780971440166

Print Book Member \$102.99 / List price \$129

Order Number: 802166

Digital Book List price \$129

Order Number: 80216Q

Guidebook for the Design of ASME Section VIII Pressure Vessels, Fourth Edition (2010)

James R. Farr and Maan H. Jawad

344 pp ISBN: 9780791859520

Print Book Member \$75 / List price \$94

Order Number: 859520

GET MORE INFORMATION AT ASME.ORG

ASME In-Company Training Programs



Benefits of In-Company Training

Get tailored instruction for your company

We will work with you to customize courses and address particular issues and challenges relating to the daily work of your employees. Workshops can be arranged to provide problem solving activities to address these specific issues. Tailoring can also add opportunities for hands-on learning, group activities and Q&A sessions.

Learn directly from industry experts

ASME courses provide the opportunity to receive training from industry leaders who share their real-world experiences. Our code courses are mostly taught by committee members with knowledge of the history and application of the Code and insight into the current issues being discussed.

Affordable and convenient training

We work with you and the expert instructor to determine a mutually convenient time for the course. The In-Company option minimizes travel costs and staff downtime. It's more cost-effective on a per-person basis to train your employees in this group setting.

Diverse inventory of courses

Any one of the extensive number of courses in this catalog can be brought to your company for your employees. Courses can be "off the shelf" or tailored to your specific needs.

Receive Continuing Education Units

ASME Training & Development is accredited by the International Association for Continuing Education and Training (IACET). ASME Training & Development complies with the ANSI/IACET Standard, which is recognized internationally as a standard of excellence in instructional practices. As a result of this accreditation, ASME Training & Development is authorized to issue the IACET CEU.

Frequently Asked Questions

Which courses can be brought to our site?

ASME Training offers an extensive list of courses which are listed on our website. Any of these courses, depending on instructor's availability, can be held at your company.

Can the course material be revised to meet our specific needs?

Yes. Courses can be modified to provide new topics or additional content on a given subject. Courses can also be condensed to spend less time on topics that are not required.

What do we need to provide?

You need to provide a training room with audiovisual equipment.

What is the typical class size?

We can work with as few as eight to as many as 30 participants. The larger the class size, the more cost effective the training becomes, on a per-person basis.

How much lead time is necessary to schedule an In-Company course?

Generally eight to ten weeks are needed to work with your company and the instructors to tailor the course, set up logistics and order materials. We work with you and the expert instructor to determine a mutually convenient time to deliver course.

Can you provide training for my international sites?

Yes, most of our trainers have international experience and are able to deliver courses to a global market. We also have trainers located across the world with local expertise.

For more information,
visit go.asme.org/corporate
or scan with a smartphone:



Developing Conflict Resolution Best Practices

PD591

This course teaches how to minimize and resolve conflicts with co-workers, partners and business counterparts by providing simple, effective tools and techniques for handling conflict and improving interpersonal relationships. It was designed with an awareness of not only inter-organizational relationships and multiculturalism, but also educational, cultural and economic backgrounds.

The course also covers techniques for diffusing confrontational, volatile, and even dangerous situations which can develop during team building or critical meetings, a highly sought after skill in today's multicultural workplace environments.

Each participant will receive a copy of the book, *The Knowledge Tornado: Bridging the Corporate Knowledge Gap*, and a copy of the book, *Conflict Resolution: Concepts & Practice (The Technical Manager's Survival Guides)*, both by Marcus Goncalves.

You Will Learn To

- Describe the nature of conflict and how to recognize positive versus negative conflict
- Identify the elements of effective communication
- Determine who owns a problem
- Recognize vicious cycles
- Assert yourself respectfully
- Explain the methods used for reducing tensions and resolving conflicts

Who Should Attend

This course is for anyone who works in a group setting.

Instructor Marcus Goncalves

2 Days, 1.5 CEUs, 15 PDHs

Member \$1,450 / List Price \$1,550

Root Cause Analysis Fundamentals

PD618

This 3-day course provides an introduction and extensive discussion of many different tools for root cause analysis. Each one is presented in an easy-to-follow structure: a general description of the tool, its purpose and typical applications, the procedure when using it, an example of its use, a checklist to help you make sure it is applied properly along with different forms and templates (contained in the book provided with the course materials).

The examples used can be tailored to many different industries and markets. The layout of this course has been designed to help speed participants' learning through short videos depicting well-known scenarios for analysis in class.

Each participant will receive a copy of the book, *Root Cause Analysis: Simplified Tools and Techniques* (2nd Edition), by Bjørn Andersen and Tom Fagerhaug.

You Will Learn To

- Explain the concept of root cause analysis
- Describe how to use tools for problem cause brainstorming
- Develop strategies for problem cause data collection and analysis
- Deploy tools for root cause identification and elimination
- Practice ways of implementation solutions

Who Should Attend

All professionals involved in maintenance and reliability management strategies and tasks

Instructors Marcus Goncalves, Brian Porter

3 Days, 2.3 CEUs, 23 PDHs

Member \$1,895 / List Price \$1,995

See pages 92–95 for dates and locations of ASME Public Courses delivered in the USA during Spring 2016.

Risk and Reliability Strategies for Optimizing Performance

PD619

Intended to bridge the gap between designers/maintainers and reliability engineers, this course provides a clear explanation of the value and benefits of maintenance management to foster risk and reliability strategies. Participants will examine the role of maintenance in minimizing the risk of safety or environmental incidents, adverse publicity and loss of profitability. Participants will also discuss risk reduction strategies and tools, focusing on their applicability to specific situations, enabling them to select the tool that best fits their requirements.

Each participant will receive a copy of the book, *Effective Maintenance Management: Risk and Reliability Strategies for Optimizing Performance* by Vee Narayan, in addition to a table of fixed format codes that can be used directly or adapted for use in most maintenance management systems.

You Will Learn To

- Explain which management tasks are required and when they must be done to achieve optimum performance and reliability
- Describe the risk reduction model, which links maintenance to these risks
- Explain the connection between maintenance and safety, profitability and asset life

Who Should Attend

All professionals involved in maintenance and reliability management strategies and tasks

Instructors Marcus Goncalves, Brian E. Porter

3 Days, 2.3 CEUs, 23 PDHs

Member \$1,895 / List Price \$1,995

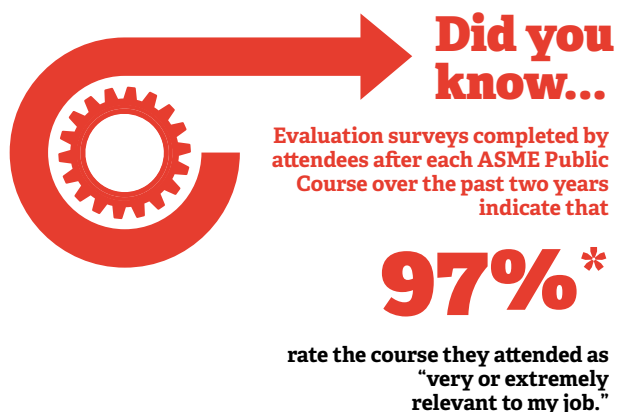


Become an ASME Mentor

Enhance Your Leadership Skills

ASME Mentors report that they...

- Enjoy feeling helpful and experience more job satisfaction
- Apply their positive experiences to interactions with employees and colleagues
- Have increased their effectiveness as managers
- Feel more valuable to their companies
- Accomplish business goals that they would not have accomplished without their experiences as ASME Mentors
- Understand better how to share information that will potentially have a positive impact on business outcomes



* ASME Course Evaluation Survey completed between July 2012 and June 2014 by 4,401 participants

Become an ASME Mentor.
Visit go.asme.org/mentoring

BPV Code, Section IX: Welding, Brazing and Fusing Qualifications

PD190 ASME STANDARDS COURSE

This is a basic course that instructs attendees how to comply with the requirements of ASME Section IX, Welding, Brazing and Fusing Qualifications. Participants gain a working knowledge of ASME Section IX. A review of the welding processes and variables – along with a review of basic welding metallurgy – is conducted to provide all participants with sufficient background in welding technology.

This background knowledge is essential in order for participants to interpret Section IX effectively.

The mechanics of using Section IX and how to address its requirements and its relationship with other code sections is explained in a simple, straightforward manner. Emphasis is placed on qualifying procedures in a cost-effective manner and on writing welding procedures that contribute positively to the manufacturing process. The requirements for qualification of welders, brazers and operators are examined, with particular emphasis on minimizing the cost and maximizing the usefulness of qualifications.

Time is provided to address individual participant's problems and concerns.

All attendees receive the current edition of *BPVC Section IX – Welding, Brazing and Fusing Qualifications* codebook.

You Will Learn To

- Explain how Section IX is organized and how to locate requirements for welding, brazing and fusing qualifications
- Consider the metallurgy and welding process knowledge that forms the basis for the rules for welding qualifications
- Formulate and write practical and instructive welding, brazing and plastic fusing procedures that are compliant with Section IX
- Determine and confirm welder performance qualifications that are compliant with Section IX
- Review welding documentation for compliance with Section IX

Who Should Attend

Mechanical and welding engineers, quality control personnel, welding supervisors, inspectors as well as project managers

INSTRUCTOR Walter J. Sperko

3 DAYS, 2.3 CEUs, 23 PDHs

MEMBER \$2,150 / List Price \$2,250

Also available as Online Instructor-Supported Course: EL516, "BPV Code, Section IX: Welding, Brazing Qualifications."

Practical Welding Technology

PD359

This course is designed for individuals seeking to expand their core competence on the subject of welding. Designers, inspectors, managers or welders with a need to understand the fundamentals of welding will also benefit from the practical aspects of welding technology presented in this course. This is the course that should have been part of your college curricula.

In-class exercises are employed to reinforce class lectures on the subjects of welding and NDE symbols, carbon equivalence, heat input, A-numbers, calculated strength of welds, joint details, welding procedures as well as selection of filler metals, determining preheat requirements and reviewing a WPS for code compliance.

Participants receive a course notebook, a copy of *Modern Welding Technology*, 6th Edition along with a copy of *AWS A3.0 Standard Welding Terms*.

You Will Learn To

- Explain welding terms and definitions
- Explain how to properly specify various weld types and nondestructive testing using standard AWS welding symbols
- Explain basic ferrous welding metallurgy
- Describe post-weld heat treatments, residual stresses, and distortion control
- Explain welding processes typically used to fabricate pressure vessels and piping systems
- Explain the interrelationship between AWS, ASME, and API codes and standards as they relate to pressure vessels, piping systems, and related facilities
- Explain Welding Procedure and performance qualification documentation and methodology applicable to pressure vessels and piping systems.
- Explain common weld defects, causes, and corrective actions
- Identify major considerations when designing a weld
- Identify common NDT used to examine welds
- Identify the elements of a cohesive welding program that includes design, purchasing, fabrication, inspections, and delivery

Who Should Attend

Managers, engineers, production and maintenance staff, inspectors, welders and others who are involved with welding of pressure vessels, piping systems and related facilities

Special Requirements

Participants should be prepared for **extended** class time as well as bring a calculator and several pencils or a mechanical pencil to class.

INSTRUCTOR Albert Moore

4 DAYS, 3.0 CEUs, 30 PDHs

MEMBER \$2,295 / List Price \$2,450

Principles of Welding

Online Instructor-Supported Course EL515

This course provides an introduction to the principles of welding technology, and is specifically designed for professionals who wish to understand the fundamental principles of welding to control and troubleshoot welding processes, reduce operating cost and improve the quality of their products. It describes the process of welding and how it affects welded materials and structures. It describes 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 weld and welding information through weld symbols on drawings. The course is an ideal prerequisite to the ASME BPV Code, Section IX for those individuals with little or no prior welding experience.

You Will Learn To

- Explain how to use and as well as apply 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
- Identify basic electric circuits that are used to accomplish arc welding
- Identify weld inspection techniques, including nondestructive examination
- Identify common problems with welding processes and explain how to troubleshoot them

22.5 HOURS, 2.3 CEUs, 23 PDHs

MEMBER \$595 / List Price \$695

Essentials: BPV Code, Section IX: Welding and Brazing Requirements

Online Assessment Based Course ZABC18

This course introduces Section IX: Welding and Brazing Requirements of the ASME Boiler and Pressure Vessel Code, covering the section's scope, organization and requirements.

2 PDHs

PRICE \$195

Essentials: BPV Code, Section IV: Rules for Construction of Heating Boilers

Online Assessment Based Course ZABC35

Provides an introduction to the ASME BPV Code, Section IV: Rules for Construction of Heating Boilers and discusses requirements for boilers constructed of wrought materials, cast iron and cast aluminum as well as those for potable water heaters.

3 PDHs

PRICE \$195

BPV Code, Section IX: Welding and Brazing Qualifications

Online Instructor-Supported Course EL516

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, and presents 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 sub-contracted by the manufacturer. The course presents basic metallurgy and characteristics of the welding processes to assist in understanding essential and nonessential variables for the qualification of procedures and personnel. Examples of documentation for welding procedure and personnel qualification are included to demonstrate how the essential and nonessential variables are identified and documented.

You Will Learn To

- Explain layout and scope of Section IX of the ASME Boiler and Pressure Vessel Code
- Identify basic rules for finding requirements in Section IX
- Describe practical, instructive welding procedures that are compliant with Section IX
- Describe the qualification of procedures and personnel in Section I
- Describe the basic features of the commonly used welding process
- 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

22.5 HOURS, 2.3 CEUs, 23 PDHs

MEMBER \$595 / List Price \$695

Also available as a 3-day Public Course: PD190, "BPV Code, Section IX: Welding, Brazing and Fusing Qualifications" (see page 78).

Online Instructor-Supported

- Advanced Finite Element Analysis **EL508 TOP SELLER**
- Advanced Geometric Dimensioning and Tolerancing **EL506 TOP SELLER**
- Introduction to Geometric Dimensioning and Tolerancing **EL505 TOP SELLER**
- BPV Code, Section III: Advanced Design and Construction of Nuclear Facility Components **EL524**
- BPV Code, Section III: Introduction **EL509 TOP SELLER**
- BPV Code, Section IX: Welding and Brazing Qualifications **EL516**
- BPV Code, Section VIII, Division 1: Design and Fabrication of Pressure Vessels **EL501 TOP SELLER**
- BPV Code, Section VIII, Division 2: Alternative Rules for Design and Fabrication of Pressure Vessels **EL502 TOP SELLER**
- Comparison of Global Assurance and Management Standards Used in Nuclear Application **EL526**
- Compressors and Process Fit for Mechanical Engineers **EL545 NEW!**
- Drawing Interpretation **EL504 TOP SELLER**
- Developing Products **EL530**
- Financial Resource Management **EL533**
- FRP Piping Fabrication and Installation Processes **EL522**
- Inservice Testing of Pumps **EL523**
- Inservice Testing of Valves **EL521**
- Inspection, Repairs and Alterations of Pressure Equipment **EL503**
- Introduction to Computational Fluid Dynamics **EL513**
- Introduction to Finite Element Analysis **EL507 TOP SELLER**
- Introduction to Geometric Dimensioning and Tolerancing **EL505 TOP SELLER**
- Leadership and Organizational Management: Leading Individuals and Engineering Project Teams **EL532**
- Lean Manufacturing **EL525**
- Marketing, Sales and Communications for Engineers **EL531**
- NQA-1 Quality Assurance Requirements for Nuclear Facilities **EL520**
- Principles of Welding **EL515**
- Project Management for Engineers **EL511**
- Risk-Informed Inservice Testing **EL527**
- Strategic Planning **EL534**
- The Bolted Joint **EL512 TOP SELLER**
- Two Phase Flow and Heat Transfer **EL510 TOP SELLER**

Visit: go.asme.elearning

Calendar for Online Instructor-Supported Courses

14 December 2015 – 25 January 2016
 8 February – 21 March 2016
 28 March – 9 May 2016
 16 May – 27 June 2016

Online Self-Study

- ASME Probabilistic Risk Assessment (PRA) Standard: Introduction **EL541**
- Basic Gas Turbine Engine Technology **EL540**
- BPV Code, Section III, Division 1: Class 1 Piping Design **EL542**
- BPV Code, Section III, Division 1: Class 2 & 3 Piping Design **EL543**
- Design of Buried High Density Polyethylene (HDPE) Piping Systems **EL544**
- FE Exam Review Online Self-Study Course **EL537**
- Heating, Ventilation and Air-conditioning (HVAC) **EL538**
- Hydraulic Design of Liquid or Water Piping Systems **EL539**

Visit: go.asme.elearning

Online Assessment Based

- ASME B46.1-2009 – Introduction to Surface Texture Measurement and Analysis **ZABC39 NEW!**
- ASME Boiler & Pressure Vessel Certification Process **ZABC9**
- ASME/ANS RA-S Standard for Level 1/ Large Early Release Frequency PRA for NPP Applications **ZABC55 NEW!**
- ASME MFC-5.3 – 2013 – Using Doppler Ultrasonic Flowmeters **ZABC65 NEW!**
- ASME Standards and Certification **ZABC19 FREE! (see web site for details)**
- Basic Gas Turbine Engine Technology **ZABC49 NEW!**
- Changing Organizational Culture **ZABC8**
- Communicating to a Non-Technical Audience **ZAB67**
- Creating Effective Technical Presentations **ZABC66 NEW!**
- Energy Choices: The Facts, Challenges and Limitations of Energy Sources **ZABC1**
- Engineering Opportunities in the Energy Industry **ZABC70 NEW!**
- Essentials – A17.6 Standard for Elevator Suspension, Compensation and Governor Systems **ZABC28**
- Essentials – A18.1 Safety Standards for Platform Lifts and Stairway Chairlifts **ZABC58 NEW!**
- Essentials – ASME B133.8-2011 Gas Turbine Installation Sound Emissions **ZABC44 NEW!**
- Essentials – B30 Safety Standard **ZABC27**
- Essentials – B31.1 Power Piping **ZABC14**
- Essentials – B31.3 Process Piping **ZABC15**
- Essentials – B31.4 Pipeline Transportation Systems for Liquids and Slurries **ZABC50 NEW!**
- Essentials – B31.8 Gas Transmission and Distribution Piping Systems **ZABC12**
- Essentials – Basic Concepts of PTC-19.1 Test Uncertainty **ZABC31 NEW!**
- Essentials – Bioprocessing Equipment (BPE) **ZABC13**
- Essentials – BPV Code, Section III, Division 1: Rules for the Construction of Nuclear Facility Components **ZABC20**
- Essentials – BPV Code, Section III: Subsection NCA **ZABC57 NEW!**
- Essentials – BPV Code, Section IV: Rules for Construction of Heating Boilers **ZABC35**
- Essentials – BPV Code, Section IX: Welding and Brazing Qualifications **ZABC18**

Online Assessment Based (continued)

- Essentials – BPV Code, Section V: Nondestructive Examination **ZABC17**
- Essentials – BPV Code, Section VIII, Division 3 **ZABC11**
- Essentials – BPV Code, Section XI, Division 1: Rules for Inservice Inspection of Nuclear Plant Components - A Detailed Overview **ZABC51 NEW!**
- Essentials – BPV Code, Section XII: Rules for the Construction and Continued Service of Transport Tanks **ZABC10**
- Essentials – CSD-1 Control & Safety Devices for Automatically Fired Boilers **ZABC48 NEW!**
- Essentials – ASME Nuclear Air & Gas Treatment (CONAGT) **ZABC46**
- Essentials – PCC-2 Repair of Pressure Equipment and Piping **ZABC59 NEW!**
- Essentials – Performance Test Codes: PTC-4 Fired Steam Generators **ZABC52 NEW!**
- Essentials – PTC-25 Pressure Relief Device **ZABC36**
- Essentials – PTC-6 Testing Steam Turbines **ZABC37 NEW!**
- Essentials – PTC 46 Overall Plant Performance **ZABC68 NEW!**
- Essentials – PVHO-1 Standard **ZABC16**
- Essentials – Rules for Construction of Single-Failure-Proof Cranes and Cranes in ASME NOG-1 and ASME NUM-1 **ZABC38**
- Essentials – ASME Y14.1/Y14.2/Y14.3 **ZABC74 NEW!**
- Essentials – Y14.5-2009 Dimensioning & Tolerancing **ZABC73 NEW!**
- Essentials – Y14.8-Castings, Forgings and Molded Parts **ZABC32**
- Ethics for Engineers: Doing the Right Thing When No One is Looking **ZABC3**
- Execution: How to Get Results **ZABC7**
- Financial Resource Management for Engineers **ZABC40**
- Fundamentals of Nanomanufacturing and Applications **ZABC25**
- Fundamentals of Nanometrology **ZABC24**
- Guide to Mobile Crane Standards **ZABC54 NEW!**
- How to Get an N Stamp – Conformity Assessment, Requirements and Procedures **ZABC4**
- Hydraulic Design of the Pumping Circuit **ZABC64 NEW!**
- Introduction to the Selection of Pumps **ZABC42**
- Introduction to the Selection of Valves **ZABC43**
- Marketing, Sales and Communications for Engineers **ZABC41 NEW!**
- Nanocoatings for Enhanced Thermal Engineering **ZABC21**
- Nanocomposites Technology & Its Impact on Engineering **ZABC22**
- Nano-Materials in Metals **ZABC26**
- NanoSystems for Applications in Water, Energy, Chemical and Biological Separations **ZABC23**
- NQA – 1 Part 1 – 18 QA Requirements **ZABC5**
- NQA – 1 Practical Application **ZABC29**
- Technical Writing for Engineers: Giving Readers What They Need **ZABC2**
- Total Quality Management **ZABC6**
- Your Career as a Mechanical Engineer: 5 Things You Should Know **ZABC71 FREE!**

Visit: go.asme.abc

Guiados Por Un Instructor

- Análisis de Fallas Mecánicas en Equipos Mineros **ZI648**
- Código ASME B31.1 Tuberías de Vapor y Sistemas de Potencia **ZI520**
- Código ASME B31.3 Tuberías de Proceso de Refinerías y Plantas Químicas **ZI570**
- Código ASME B31.4 Tuberías de Transporte de Hidrocarburos Líquidos y otros Líquidos **ZI590**
- Código ASME B31.8 Tuberías de Transporte y Distribución de Gas **ZI580**
- Código ASME Sección IX – Soldadura: Desarrollo y Calificación de Procedimientos y Soldadores **ZI540**
- Código ASME Sección VIII Div. 1 Diseño, Construcción e Inspección de Tanques y Recipientes de Presión **ZI511**
- Curso de Preparación para Examen de Certificación en Dimensiones y Tolerancias Geométricas **ZI638**
- El Análisis de Riesgos y las Tecnologías del Mantenimiento Predictivo **ZI649**
- El Análisis Vibracional en Equipos Rotativos y Mantenimiento Predictivo - Nivel I **ZI510**
- Gerencia de Proyectos de Mantenimiento **ZI644**
- Gerencia de Proyectos para Ingenieros, Profesionales y Técnicos **ZI620**
- Gestión de Integridad de Recipientes, Calderas y Tuberías a Presión **ZI512**
- Gestión y Optimización de Inventarios en Mantenimiento **ZI647**
- Inspección Basada en Riesgo I – Un Sistema Integrado de Análisis de Riesgo, Aptitud para el Servicio y Análisis de Fallas **ZI514**
- Inspección Basada en Riesgo II **ZI621**
- Introducción al Análisis con Elementos Finitos **ZI630 NUEVO!**
- Introducción a la Tecnología de Soldadura **ZI515**
- Introducción a Normas y Códigos para el Mantenimiento de Recipientes, Calderas y Tuberías **ZI513**
- Mantenimiento Centrado en Confiabilidad – MCC **ZI550**
- Preparación para el Examen de Certificación PMP **ZI643 NUEVO!**
- Seguridad Operativa en el Manejo de Equipos de Izajes **ZI641**
- Sistemas de Alivio y Venteo, Selección de Válvulas de Seguridad y Alivio Según API 521 y 520 **ZI642**
- Soldadura de Oleoductos, Gasoductos y Otras Tuberías Según API 1104 **ZI600**

Visit: go.asme.cursosespanol

Fechas de Cursos:

14 diciembre 2015 – 25 enero 2016

8 febrero – 21 marzo 2016

28 marzo – 9 mayo 2016

16 mayo – 27 junio 2016

Ted Anderson, Ph.D., P.E., chief technology officer at Quest Integrity Group, is a world-renowned expert in fracture mechanics and fitness-for-service methods. He is the author of a best-selling book on fracture mechanics, which has been adopted as a required text in over 100 universities worldwide. He was instrumental in the development of the original API 579 Fitness-for-Service document and continues to be active on the joint API/ASME Fitness-for-Service Committee. He founded Structural Reliability Technology (SRT) in 1995, which was acquired by the Quest Integrity Group in 2007. Previously, he was a member of the mechanical engineering faculty at Texas A&M University. Prior to that he was a senior research engineer at The Welding Institute in Cambridge, England. He received a Ph.D. in metallurgy from the Colorado School of Mines.

George Antaki, P.E., Becht Engineering, is a fellow of ASME with over 40 years' experience in pressure equipment. He is internationally recognized for his expertise in design, analysis and fitness-for-service evaluation of pressure equipment and piping systems. Antaki is chair of ASME B31 Mechanical Design Committee, chair of ASME III Working Group Piping Design, member of the ASME III Subgroup Component Design, ASME QME and ASME Operation and Maintenance Subgroup Piping. He is the author of three textbooks on pressure equipment design and integrity evaluation, including Fitness-for-Service for Piping, Vessels, and Tanks. Antaki earned his degree in nuclear engineering from the University of Liege, and was awarded an MS in mechanical engineering from Carnegie Mellon University.

John L. Arnold, P.E., is the founder of Niantic Bay Engineering, LLC, and is an internationally recognized expert in the assessment of boilers, pressure equipment and high-energy piping. He is a member of the Post Construction Subcommittee on Inspection Planning as well as the Committee on Power Boilers (BPV, I) and is the Chair of the Subgroup on Fabrication and Examination for BPV I.

Gabriel Auriolles is currently technology director for Aspen Technology, a recognized worldwide leader in simulation technology of process plants. He has over 35 years of experience in the design of shell and tube heat exchangers and pressure vessels. Auriolles is the current chair of the ASME Sub-Group on Heat Transfer Equipment and a member of the Boiler and Pressure Vessel Committee and other ASME code committees. He is involved in development of heat exchanger optimization technology using ASME and other internationally recognized safety and construction codes. He is an expert in software algorithms and principal architect of engineering software for the design of shell and tube heat exchangers. Prior experience includes chief engineer of a major fabrication shop as well as process development engineer. He has a bachelor's degree in chemical engineering from the University of Florida.

John Blanton is chief consulting engineer, Heat Transfer, for GE Energy. With over 30 years' engineering design and analysis experience in industrial and aircraft engines with GE Research, GE Aviation and GE Energy, his work has included leadership of industrial gas turbine alternative fuels research programs, including industrial gas turbine compressor design and SCRAMjet propulsion system studies. For the past 20 years his work has focused on gas turbine heat transfer and thermal management. Blanton also has been an adjunct faculty member at Union College in Schenectady, New York, and at the University of Cincinnati. He is an active member of ASME and AIAA and serves on several IGTI technical committees.

Robert D. Blevins, Ph.D., is a member of the ASME Special Working Group on Structural Dynamics and the Pressure Vessel Research Council's Committee on Dynamic Analysis of Pressure Components. Blevins has more than 25 years' experience in flow-induced vibration. Having earned a Ph.D. from the California Institute of Technology, he is a frequent consultant to government and industry. Blevins is the author of three books and over 30 papers on fluid flow, structural dynamics and flow-induced vibration.

Douglas A. Brown has been involved with the nuclear power industry for more than 33 years. His activities have included design, procurement, construction, testing, operations, maintenance and refueling of both BWRs and PWRs. A leader in the development of ASME codes and standards, Brown is the past chairman of the ASME Nuclear Quality Assurance Committee.

Greg W. Brown, Ph.D., is principal consulting engineer and general manager of Advanced Engineering for the Quest Integrity Group. In 2001, he joined Ted Anderson at Structural Reliability Technology, which later became part of Quest Integrity Group. Previously, he developed algorithms to update industrial finite element models using experimental measurements and performed flutter analyses of F16 and F18 fighter aircraft. Anderson, Brown and the engineers at Structural Reliability Technology performed much of the work that was incorporated into API 579. He currently performs computational mechanics and CFD analyses, specializing in litigation and failure analysis. His group performs Fitness-for-Service assessments for a variety of industries using API 579. Brown also develops specialized software and methodologies for structural analysis and life assessment.

Bruce Chehroudi, Ph.D., has been an award-winning engineer/scientist/R&D Manager for nearly twenty years in automotive, aerospace, energy, environment, nanotechnology and medicine. He has worked at Raytheon STX, Ford, Air Force Research Laboratory, Princeton University, General Motors and NASA. He has been a technical and R&D consultant for organizations such as Honda R&D, Honeywell, NASA, GE, Boeing, TRW, General Motors, Amgen and GlaxoSmithKline. Chehroudi earned a Ph.D. in mechanical & aerospace engineering, and was a post-doctoral fellow at Princeton University and was awarded an MS in mechanical engineering from Southern Methodist University and an MS in economics and management from Swiss Finance Institute. He has more than 150 publications and patents.

Derrick Chevalier is an internationally acclaimed consultant with more than 21 years' experience who has facilitated hundreds of seminars and workshops throughout the United States, Canada, Mexico, and elsewhere. He has consulted and worked with engineers, technical professionals, project managers, and business development executives from a wide range of disciplines and areas, including electrical, mechanical, bridge maintenance, aerospace, transportation, manufacturing, information technology, bio-chemistry, pharmaceuticals, nutrition, real estate, finance, and accounting.

Alan Cline, PMP, PMI-ACP, is currently a consultant and agile iteration coach, and president of Carolla Development, a project management consulting company. He has been in the software industry for about 35 years, and a process engineer consultant for the last 25. He holds an Agile Certified Practitioner (PMI-ACP) and a Project Management Professional (PMP) credential from the PMI. He also teaches BA, PM, PMP-prep classes, and ACP-prep classes internationally. He is currently writing a book on agile practices for those new to agile so that they can deliver software predictably with unusually low defect rates. Previously, Cline was the director of Software Engineering for Flairsoft Federal. He was the software engineering lead and iteration coach for a \$3.3M agile project at Wright-Patterson Air Force Base. He was a lecturer at Ohio State University, and the AVP of Nationwide's Requirements Center of Excellence. He earned his MS in physics and BS in mathematics, both contributing to his passionate zeal for rigor in software development and project management.

Jack R. Cole, P.E., has over 35 years' experience in the nuclear power industry, including nuclear waste management, plant construction, and commercial power plant design. Cole is retired from Energy Northwest, the operator of the Columbia Generating Station BWR in Richland, Washington. He last served as the Design Authority responsible for plant civil/structural/stress licensing basis compliance. Cole has been an active member of ASME Section III Codes and Standards for the past 26 years. He is currently vice chair of BPV Committee on Construction of Nuclear Facility Components (III), chair of the BPV III Executive Committee on Strategy and Project Management, chair of the Special Committee on Interpretations (BPV III), member of the Subgroup on Component Design (BPV III), member and past chair of the Working Group on Piping, and past member of the Working Group on Supports (III). He is currently an advisory engineer to Becht Engineering's Nuclear Services Division.

Gary Dichtenberg is a recognized expert in persuasion and communications skills. He is the president of training and development firm Professional Development Associates, which he founded following similar work at Citicorp and Consolidated Edison. He has since conducted numerous workshops and provided consulting services to companies such as MassMutual, Delta Air Lines, Lucent Technologies, and Pfizer. Dichtenberg is a member of the commercial panel of the American Arbitration Association, the Network of Organizational Development Practitioners, and the American Society for Training and Development.

Paul Drake developed the successful application of Six Sigma mechanical processes at Raytheon Systems Company, where he co-managed the Mechanical Tolerancing and Performance Sigma Center for Excellence. Drake is an ASME certified senior level geometric dimensioning and tolerancing professional, a registered professional engineer and has earned a Six Sigma black belt.

Philip D. Flenner, P.E., has spent nearly 40 years in welding qualifications and training, engineering training, power plant maintenance and performance assessment. He has developed several guidelines on material control, repair methods and the use of codes and standards for the power industry. He participates significantly on several piping codes, welding qualification codes and materials codes, and has gained the honor of being named an ASME fellow. Flenner has participated in industry research on the effects of PWHT on ASME materials, and has played significant roles in sponsoring changes in ASME Code requirements covering preheating and PWHT.

Joe Frey, staff consultant at Stress Engineering Services, Inc. (SES) is a licensed engineer who previously spent 24 years at Houston Lighting & Power and Reliant Energy where he was responsible for providing engineering support for the FFS program for all boilers, pressure vessels and high energy piping. Since joining SES in 2004 he has worked several emergency repairs, including eight fire assessments in the last four years. He is currently chair of the ASME B31.1 Power Piping Code Committee.

Don Frikken, P.E., is a recognized authority in piping design, currently employed by Becht Engineering, and prior to that, with Solutia, Inc., and Monsanto Company. Frikken's principal specialty is piping design, including design of complex piping systems, piping flexibility analysis, selection of piping components including valves, development of piping standards and specifications, and developing and teaching numerous piping seminars and workshops. Frikken is an ASME fellow and is active on various ASME standards committees. He is a member and past chair of the ASME B31.3 Process Piping Code committee, as well as member and past chair of the B31 Standards Committee. Frikken has received a number of awards, including the ASME Melvin R. Green Codes and Standards Medal, which recognizes outstanding contributions to the development of documents used in ASME programs of technical codification, standardization and certification. Frikken graduated with a BSME from Kansas State University and has a MS in civil engineering from the University of Missouri-Rolla.

Timothy Gilman is an expert in ASME Section III fatigue and environmentally-assisted fatigue analyses, and fatigue monitoring of vessel and piping components in nuclear power plants. He has over 20 years' experience in the nuclear industry and has been involved in a majority of the PWR license renewal applications to-date. Gilman is currently with Structural Integrity Associates, and for the past 7 years has managed the Fatigue Monitoring & Environmental Fatigue engineering group. He is a key contributor to the development of SI's fatigue monitoring systems, installed at over 100 nuclear units worldwide. He also authored EPRI's creep fatigue software for monitoring fatigue and creep damage in fossil power plants. Gilman earned his degree in civil engineering from California Polytechnic State University and his MS in civil/structural engineering from the University of California at Berkeley.

Marcus Goncalves has over 15 years' management consulting experience in North America, South America, Europe, the Middle East, and Asia. Goncalves specializes in knowledge, project change and risk management practices, and has published more than 30 books in the United States, and is often invited to speak on these subjects worldwide. He is a member of the Project Management Institute and a certified project management professional (PMP), and was simultaneously awarded Who's Who in the "US Executives" and in the "Computer Industry" by the Rockefeller and Carnegie Foundations. He holds a MS in computer information systems and a BA in business administration.

Barry Gordon, P.E., is a fellow and corrosion specialist in the National Association of Corrosion Engineers (NACE), as recognized for his expertise in LWR corrosion phenomenon. He was the chair of NACE committees on nuclear systems and energy technology. Gordon has over 45 years' experience and expertise in materials corrosion behavior in nuclear power plant environments, has over 75 publications, including co-authoring three books on LWR corrosion phenomena. He has served as an expert witness testifying for utilities before the US Nuclear Regulatory Commission's (NRC's) Advisory Committee on Reactor Safeguards and Atomic Safety Licensing Board. Gordon is a certified LWR corrosion instructor for both the US NRC and International Atomic Energy Agency and is author/co-author of numerous EPRI®, MRP and BWRVIP programs and reports.

Dyer Harris, Ph.D., P.E., is currently a senior consulting engineer with the Warren Group and president of Equipment Engineering Services. He has over 30 years' experience in industrial thermal systems analysis, heat exchangers, process equipment, two-phase flow and HVAC. As a research engineer for DuPont at the Savannah River Site (SRS), Harris specialized in heat transfer at high thermal flux in reactors and heat transfer related to nuclear waste processing. As a consulting engineer he analyzes, designs and troubleshoots heat treatment processes for various industries. He has taught thermodynamics and heat transfer at the University of South Carolina and Villanova University, and currently teaches at the University of Delaware.

Ronald W. Haupt, P.E., has more than 40 years' experience in the design and analysis of industrial process and energy-related structures, equipment, piping, pipelines and supports. Currently a consulting piping engineer for Pressure Piping Engineering Associates, he is an active member of several ASME and other national codes and standards committees.

Charles J. Hellier founded Hellier Technical Training and Consulting from which he retired in 2011. Presently he is an independent consultant and principal of The Summit Group. He is also vice president of NDTclassroom, Inc. and is currently engaged in the development and promotion of a complete online training series on nondestructive testing and inspection. Active in the technology of nondestructive testing and related quality and inspection fields for over 50 years, Hellier is frequently called upon to provide independent third-party assessments and to assist in the resolution of disputes as an expert witness. Hellier authored the Handbook of Nondestructive Evaluation 2nd edition (McGraw-Hill). He holds an ASNT Level III Certificate in five methods, is a Board Certified Forensic Examiner and holds memberships in ASME, ASTM, ASM, AWS, ACFE and ASNT (lifetime, fellow, and past president). He is also past president and remains active with the Nondestructive Testing Management Association (NDTMA).

Jeff Henry has worked in the power industry for more than 35 years, where his activities have focused on the elevated temperature behavior of materials, failure analysis, condition assessment, and welding metallurgy. He is active on several technical committees of the ASME Boiler and Pressure Vessel Code and is current chair of BPV II as well as the chair of the Task Group on Creep Strength Enhanced Ferritic Steels.

Philip Henry, P.E., is technical advisor for the Equity Engineering Group, Inc., with over 25 years' experience in the refining and petrochemical industries. He is responsible for engineering consulting services in the areas of pressure relief, heat transfer and fluid flow. Henry is a specialist in the design, installation, sizing and selection of pressure relief devices and relieving systems and is currently chair of the API Pressure Relieving System Subcommittee's Task Force on STD 520 related to the design and installation of pressure relieving systems. He conducts audits of pressure relieving systems to ensure compliance with OSHA PSM legislation and ASME, API and DIERS standards, codes and publications. Additionally, he teaches the official API Pressure Relieving Systems course. Henry is actively involved in the development of technology for the API Risk-Based Inspection (RBI) methodology. He is co-author of the re-write of API 581, "Risk-Based Inspection Technology" and is responsible for the development and implementation of risk-based inspection programs for fixed equipment, pressure relief valves, and heat exchanger bundles at several refining and petrochemical plants. He has developed consequence models for use within RBI programs.

Dyke Hicks joined Kiefner in 2015 after over six years with Koch Pipeline LLC and 13 years with Baker Hughes. His career began working in the energy sector recording and interpreting information from oil and gas wells on land and offshore. He then moved into the field of pipeline integrity helping to develop a new inspection system for difficult pipelines. Mr. Hicks was involved in tool design, data interpretation and the managing the U.S. operations of this division. He then moved to Koch Pipeline LLC and worked within the integrity group. There, Mr. Hicks managed the daily integrity operations and focused on some of the more challenging problems pipeline operators face. He also took a field assignment to help develop project managers. Mr. Hicks is a current member of ASME. He earned his B.S. in Electrical Engineering from Iowa State University and his B.S. Mathematics/Economics from the University of Iowa. Mr. Hicks has authored several papers regarding pipeline integrity.

Jack Hipple is a principal of Innovation-TRIZ based in Tampa, FL. He leads innovation problem solving sessions with clients and trains in the TRIZ Inventive Problem Solving Process and other state-of-the-art innovation and creativity methods. Hipple has 35 years' experience in the chemical and materials industries and in the use of innovation and creativity tools, including 26 years with Dow Chemical, where he was responsible for global chemical engineering research as well as for the Discovery Research program at its largest technology location in Michigan. Subsequently, he was responsible for major new technology programs at Ansell Edmont and Cabot Corporation. Prior to forming his own company, Hipple was a senior consultant with Idea Connections and business development manager for Ideation International, a leading developer of TRIZ methodologies.

Wolfgang Hoffelner is currently the Managing Director of RWH consult LLC, a Swiss-based consulting entity for materials and energy-related consultancy. Prior to consulting, he was manager of the High Temperature Materials project at the Swiss Paul Scherrer Institute, and senior lecturer for High Temperature Materials at the Swiss Federal Institute of Technology (since 1986). Hoffelner also worked at ABB (formerly BBC), where he held different positions ranging from research scientist, group leader in the laboratory, and head of section mechanics and materials for Gas Turbines and Combined Cycle Plants. In 1990, Hoffelner joined the Swiss Company MGC-Plasma Inc., as a board member, responsible for technology of metallurgical and environmental applications of thermal plasma. He is currently an active member of various ASME Code committees, ASM and TMS. He has published a book on materials for nuclear plants and more than 150 papers in scientific and technical books and journals. He is a contributing member to various ASME Code committees, including ASME Section III, Construction of Nuclear Power Plants.

Greg L. Hollinger has over 35 years' experience in power related industries, including commercial nuclear power and other nuclear power technologies. Thirty years of that experience was with The Babcock & Wilcox Nuclear Power Generation Group in areas of design, code certification, completed component shipping, quality assurance and technical training on nuclear and non-nuclear codes and standards. Hollinger currently is senior advisory engineer at Becht Engineering's Nuclear Services Division. He is a member of ASME Boiler and Pressure Vessel Nuclear Code committees and the ASME Board on Nuclear Codes & Standards. He is an ASME Section III Appendix XXIII Certified Registered Professional Engineer. In 2004, he was honored with the ASME Pressure Vessels and Piping Division Medal.

Ronald H. Howell, Ph.D., P.E., has more than 40 years' experience teaching refrigeration, heating and air conditioning, thermal analysis and related areas. He has also helped develop educational and experimental laboratory equipment. Howell's industrial and consulting work includes solving ventilation and condensation problems and creating and implementing a complete air curtain test program. A fellow of ASHRAE and a member of ASME, he was also chair of mechanical engineering at the University of South Florida.

Gene Imbro has worked in the commercial nuclear power industry since 1969 and has broad knowledge of light water reactor (LWR) designs and operation. His career began at combustion engineering, a nuclear steam supply system vendor, where he was involved with the design of reactor coolant and accident mitigation systems. Imbro also worked for an architect/engineering firm as a systems designer for balance of plant and other A/E supplied systems before joining the United States Nuclear Regulatory Commission (USNRC) where he worked for 33 years. Imbro served as NRC's deputy director, Division of Construction Inspection and Operational Programs in the Office of New Reactors. During the past 20 years, Imbro has actively participated on ASME committees dealing with pressure boundary design and repair, operations and maintenance as well as nuclear quality assurance. Since his retirement from the NRC, Imbro has performed consulting work for the NRC, foreign regulators and reactor vendors.

San Iyer has over 20 years of experience in the nuclear pressure vessel and piping industry. He is currently the manager of the engineering group responsible for the reactor design/analysis and fabrication with Atomic Energy of Canada Ltd. Iyer has guided several professional engineers for the successful completion of projects in nuclear pressure vessel and piping design, fabrication and installation at reactor sites. His work has been published in several international journals and presented at conferences. Iyer is member of the Design & Analysis Committee in the Pressure Vessel & Piping Division of ASME.

William S. Janna Ph.D., is a professor of mechanical engineering at the University of Memphis, where he has taught for nearly 25 years. He earned his BS, MS, and PhD degrees from the University of Toledo. Previously, Janna worked at the University of New Orleans for 11 years, including four years' service as chair of the Mechanical Engineering Department. He has written three textbooks, including *Introduction to Fluid Mechanics*, *Engineering Heat Transfer* and *Design of Fluid Thermal Systems*, and has written numerous research papers as well as been a contributing editor to several handbooks. Janna serves as a textbook reviewer for *Applied Mechanical Reviews*.

J. Ryan Jones, P.E., is a consultant and director of the Mechanical Engineering Business Unit at The Equity Engineering Group, Inc. and has over 15 years' experience in the petrochemical and refining industries. Jones brings a depth of experience covering the full project life-cycle including design/procurement activities, construction/commissioning activities, plant maintenance activities and failure analysis/fitness-for-service/decommissioning activities in petrochemical environments. Jones uses advanced engineering principles and analysis tools to solve design or operational problems in the most practical, cost-effective manner. He is a member of the ASME Post Construction Code Committee for Repair of Pressure Equipment and Piping (ASME PCC-2). Jones earned his BS in mechanical engineering at The University of British Columbia, Canada. He is a registered professional engineer in a number of Canadian provinces.

Hugo Julien, P.Eng., began his career in pressure equipment and storage tanks as designer and quality manager at HC Vidal Ltd., and later as quality systems manager at Xebec, Inc. Since 2007, he has served as mechanical integrity advisor at GCM Consultants. An active ASME/CSA member, he is also a certified API 510, API 570, API 571 and CSA W178.2 Level II (CSA B31.3, ASME W47.1/W59, and CSA Z662) inspector. Julien graduated from l'Ecole Polytechnique de Montréal with a degree in mechanical engineering, specializing in manufacturing.

James D. Keith is the vice chair of the Committee for the ASME Y14.43 Standard for Gages & Fixtures. He has extensive experience teaching all aspects of geometric dimensioning & tolerancing and related topics. Keith has worked in a variety of capacities in the field of GD&T with over 40 years' experience in structural, mechanical and electrical design/checking, and manufacturing. His experience includes more than 30 years' GD&T (ASME/ISO), design checking and blue print reading course development and instruction of at the industry and college level. In addition to his service on the ASME Y14.43 Committee, Keith is also a member of the ASME Y14.3/4 Committee (orthographic and pictorial views), ASME Y14.5 Committee (Dimensioning and Tolerancing), ASME Y14.8 Committee (Forging and Casting), ASME Y14.36 Committee (Surface Texture), ASME Y14.45 Committee (Measurement Data Reporting), ASME Y14/B89 Joint Working Group (Definition of Engineering Measurements) as well as ASME B89.4.21 Practical CMM Applications. Keith is the owner of Critical Concepts, a consulting and prototype manufacturing shop.

Medhat Khalil is the director of professional education and research at the Milwaukee School of Engineering. He has extensive experience in fluid power and motion control technology in both industry and academia. He has developed courses for college students and industry professionals. Khalil's expertise in the field of fluid power includes Hydraulic and Electro-hydraulic servo-systems design, component selection, and dynamic hydraulic system performance analysis. He is also expert in energy saving, power management and fail-safe strategies in the design of hydraulic systems.

Carolyn Kolovich began her career at Kiefner and Associates after graduating from Ohio State University with a degree in mechanical engineering. During her time at Kiefner and Associates, she has been involved in many aspects of pipeline integrity including in-line inspection analysis, integrity management planning and defect assessment. She is a member of the ASME B31.4 Committee.

William Koves, Ph.D., P.E., ASME fellow, has over 40 years' experience in the design and analysis of pressure equipment. His extensive ASME and PVRC committee involvement includes ASME B31 Mechanical Design Technical Committee (current chair), ASME B31.3 Process Piping Committee (past chair), ASME Post Construction (PC) Subcommittee on Flaw Evaluation (past chair), ASME (PC) Standards Committee and Subcommittee on Repair, ASME Boiler and Pressure Vessel (BPV) Subcommittee on Design Analysis, ASME BPV Subcommittee on Elevated Temperature Design, ASME Special Working Group on Bolted Flange Joints, Pressure Vessel Research Council (PVRC) (past vice chair), PVRC Committee on Piping and Nozzles, PVRC Committee on Elevated Temperature Design (past chair), and PVRC Subcommittee on Shell Intersections (past chair). Koves is author of over 30 publications in the field; a recipient of many committee, society, and company awards; and holder of 24 US and three European patents.

Robert Krieger is a consultant in the elevator industry and a provider and facilitator of educational and administrative services to employers participating in vertical transportation education programs including the National Association of Elevator Contractors Educational Certification Programs. He has over 25 years' experience in the conveyance industry, first as a mechanic and then as an inspector for the city of Los Angeles and the state of California. He is also an American Red Cross certified instructor in first aid, CPR with AED for adult, child, and infant. Krieger holds certification as a CET-S with the National Association of Elevator Contractors, QEI with the National Association of Elevator Safety Authorities International, journeyman mechanic and NEIEP instructor with the International Union of Elevator Constructors and certified biomedical equipment technician with clinical lab specialty with International Union of Operating Engineers.

David E. Lay, BA, MBA, is the director of training for Hytorc, the largest manufacturer of hydraulic bolting tools. He has been involved in teaching both the theoretical and practical aspects of heavy industrial bolting since 1992, and has been involved in corporate training for over 25 years. Lay is the author of several multimedia courses that have been adopted as teaching standards for union apprentice programs in the millwright and pipefitter trades across North America. He is an affiliate member of ASME and brings a practical view of complex problems that can be understood by workers and non-engineers, yet withstands the rigors of quantitative review. Lay is a member of ASME's Post-Construction Standards Committee and Bolted Flange Joint Subcommittee, which recently created the PCC-1-2010 "Guidelines for Pressure Vessel Boundary Bolted Flange Joint Assembly" document.

Robert Allan Leishear, Ph.D., P.E., is a fellow engineer at the Savannah River National Laboratory. His focus has been on fluids, structural and machinery dynamics. He has extensive experience as a research, design, test and plant engineer. Leishear has created or taught several courses to ensure safety, cut costs, and prevent problems with plant equipment. Leishear has served on several ASME committees, and is currently a member of the ASME B31.3. Committee, subgroup on design and the ASME B31 Mechanical Design Committee, serving as a project manager and principal author for writing a new standard, ASME B31D – Piping Design for Fluid Transient Dynamic Loads. Leishear earned his BS in mechanical engineering from the Johns Hopkins University, and both his master's and doctorate in mechanical engineering from the University of South Carolina. He has published several research articles and textbooks on subjects, including nuclear and industrial processes.

Bill Lowry, P.E. has 44 years' experience working in the design of industrial steam and power generation facilities. He has operated a municipal steam-electric generation plant, including a unit he designed. Recently retired, Lowry remains a consultant for power and steam projects. He is currently a member of ASME Code Subcommittee I-Power Boilers and has over 42 years of active ASME Code committee membership. Lowry recently completed an editorial rewrite of the ASME Code VII-Recommended Guidelines for the Care of Power Boilers.

Mohammad A. Malek, Ph.D., P.E., is an internationally recognized boiler and pressure vessel expert with over 30 years' experience in design, construction, installation, operation, maintenance, inspection, and repair of boilers and pressure vessels. Currently he is a pressure systems manager and subject matter expert at Stanford University – SLAC National Accelerator Laboratory, California. Previously, Malek worked for Kellogg Brown and Root as senior technical advisor, for Mustang Engineering as senior mechanical engineer and for the states of Florida and Maine as chief boiler inspector. He was adjunct professor at the FAMU-FSU College of Engineering, Tallahassee, Florida. Malek has served on ASME committees (Conference Committee, CSD-1 and QFO Committee, and has been an ASME instructor for boiler and pressure vessel courses since 2001. Malek has authored several books, including Power Boiler Design, Inspection, and Repair (McGraw-Hill, 2004), Pressure Relief Devices (McGraw Hill, 2005) and Heating Boiler Operator's Manual (McGraw Hill, 2006).

Jackie Martin of Training Systems, Inc., is dedicated to helping small and medium size organizations enhance their ability to recruit, inspire and retain quality employees and improve performance through training. The company also provides training design and facilitation services to training companies, the training departments of large companies and trade and professional associations. Martin is also currently a leader in an international direct selling organization where she directs a team of independent business owners providing support and training both on a local and national level. She is also the former director of communications and training for Citizens Against Crime and a national franchise company, for which she has facilitated thousands of seminars for companies across the country.

Bob McReynolds has been working as a welding and metallurgical engineer in the defense and infrastructure industries since 1993. He has worked in engineering and quality roles on nuclear power plant modifications, repairs and new constructions. Outside of the nuclear industry, McReynolds has also worked on improving the laser and resistance welding operations of a defense subcontractor and performed weld quality inspections during the fabrication of major bridge components. He is licensed as a Professional Engineer in the Metallurgical discipline in the state of California and is an American Welding Society Certified Welding Engineer. He has a Bachelor's degree in Metallurgical Engineering from the Illinois Institute of Technology, a Master's degree in Materials Engineering from San Jose State University, and graduated from the College of Oceaneering as an underwater weld inspector. Presently, McReynolds is the Manager of Welding and Materials Engineering on the construction site of a new nuclear power plant.

Jim E. Meyer, P.E., has over 40 years' experience in refining petrochemical, chemical, power generation and industrial facilities. He is a principal engineer at Louis Perry and Associates, a full service engineering and architectural firm, located in Wadsworth Ohio. Meyers is experienced in overall project coordination/management, pressure equipment, piping design, analysis, specifications, support design, mechanical system requirements and documentation requirements. In particular, areas of his technical competence include ASME piping and pressure vessel codes, stress analysis, field troubleshooting piping system support, vibration, and expansion problems. Meyers is a member of ASME and has been involved in the ASME B31.1 and ASME B31.3 Section committees for over 35 years. He is currently chair of the ASME B31.3 Process Piping Section Committee, chair of the ASME B31 Standards Committee, and serves on the ASME Board on Pressure Technology Codes and Standards. Meyers has also served as chair of ASME B31.1 Power Piping Code Section Committee.

Kamran Mokhtarian, P.E., has 40 years' experience in design, analysis and fabrication of pressure equipment. He presently performs consulting services to the pressure vessel industry. He is a member and past vice chair of ASME Code Subcommittee VIII, a member of ASME Post Construction Committee, ASME/API Joint Committee on Fitness-for-Service and a number of other professional organizations. He is also a past chair of the Pressure Vessel Research Committee (PVRC).

Frederick J. Moody has spent more than four decades with General Electric Company designing and analyzing boiling water nuclear reactors, containment, components and fluid flow systems. He has taught advanced engineering courses for the company and as an adjunct professor at San Jose University. Moody received the George Westinghouse Gold Medal Award in 1980, the ASME Pressure Vessel and Piping Award in 1999, and was inducted into the Silicon Valley Engineers Hall of Fame in 2000.

Albert J. Moore Jr., is a principle of Marion Testing & Inspection, which has provided welding and NDT consulting services and third party inspections since 1989. His credentials include certifications as an AWS senior certified welding inspector with five endorsements and a NOCTI certified welding instructor. He currently holds ASNT ACCP Professional NDT Level III certificates in four NDT test methods: RT, UT, MT and PT. Moore earned an AS in civil technology (steel design), a BS in applied science and technology (welding technology) and an MBA as well as a certificate of professional development from the Department of Welding Engineering of Ohio State University. He has been certified for the SMAW, GMAW, FCAW, GTAW, and SAW processes. He is a member of the AWS Certification Committee and the AWS Committee for Methods of Inspection as well as several certification subcommittees and the subcommittees responsible for the Guide to Visual Inspection of Welds and the Welding Inspection Handbook. Moore is also a contributing author for Inspection Trends published quarterly by the AWS.

Norman P. Moreau, P.E., is president and a senior management consultant for Theseus Professional Services, LLC. He has been involved in software development and software quality assurance for over 20 years. Since 1990, he has been an active participant on the ASME Committee on Nuclear Quality Assurance (NQA). Moreau was recently elected the first chair of the new Subcommittee on Software Quality Assurance. Moreau has been a subject matter expert, auditor and appraiser on the behalf of commercial and government users of computer software. He is a registered professional engineer and holds a bachelor's degree in mechanical engineering and a master's degree in software engineering administration.

Scott Neumann is a senior partner in Technical Consultants Inc. He specializes in geometric tolerancing and tolerance stack-up and analysis. He is also an expert in measurement and inspection techniques. Neumann presents geometric tolerancing training programs to engineering, manufacturing and quality personnel at major corporations in the USA and around the world. He was a major contributor to the Geometric Tolerancing Applications with Stacks Workbook and the Geometric Tolerancing Stacks and Analysis Workbook. He has also co-authored a book and coproduced a DVD video series to the ASME Y14.5-2009 standard, *Geo Tol Pro: A Practical Guide to Geometric Tolerancing*. He is a member of the American Society of Mechanical Engineers (ASME) and is a senior level ASME certified, geometric dimensioning and tolerancing professional. He represents the US in the International Standards Organization, ISO TC10 committee. He regularly attends the ASME Y14.5 subcommittee on dimensioning and tolerancing, and is also a member on the ASME Y14.45, Measurement Data Reporting committee. Neumann graduated from University of Florida with a degree in mechanical engineering.

David A. Osage, P.E., is internationally recognized for his expertise in the design of new equipment and as an industry expert and leader in the development and use of FFS (fitness-for-service) technology. He is the president and CEO of The Equity Engineering Group, Inc., and has over 30 years of experience in the refining and petrochemical industries. As the lead investigator and principal author of the new ASME B&PV Code, "Section VIII, Division 2, Rules for Construction of Pressure Vessels: Alternative Rules," he developed a new organization and writing style for this code and was responsible for introducing the latest developments in materials, design, fabrication, and inspection technologies. These technologies include new models for materials behavior suitable for use in a construction code, updated design-by-rule methods, modern design-by-analysis procedures including the introduction of elastic-plastic analysis methods, and a new fatigue method for welded joints. Osage received a Certificate of Acclamation from ASME for this work. He has served on several ASME B&PV VIII Code Committees. He earned his BS and MS in mechanical engineering from the Stevens Institute of Technology in 1977. He is a registered professional engineer in Ohio.

James Payne, P.E. established JPAC Inc. in 1981 to provide mechanical engineering consulting services, specializing in bolted flanged joints and gaskets. Previously with Exxon Research & Eng. Co., he engaged in the mechanical design and troubleshooting of piping systems and pressure vessels and participated in 12 plant start-ups around the world. He has been active in the bolted joint and gasket activities of the PVRC, ASTM and ASME, is a contributing author to *Gaskets and Gasketed Joints* (Ed: J. Bickford, Marcel Dekker, 1998) and a founding member of the ASME Special Working Group on Bolted Flanged Joints. Payne is also a member of the Post Construction (PCC) and its Subcommittee on Flanged Joint Assembly, which is responsible for the Standard, "PCC-1 Guidelines for Bolted Flanged Joint Assembly."

Daniel T. Peters, P.E. is an internationally recognized expert in the design and analysis of pressure equipment and pressure vessels, specializing in high-pressure equipment. He is currently an associate with Structural Integrity Associates, Inc., and works in the area of pressure vessel and piping design, analysis, fitness for service, and asset management. He has applied engineering principles to the in-service inspection of equipment and long term asset management. This includes remaining life assessment utilizing fracture mechanics and fatigue, flaw evaluation and practical application of NDE techniques. Peters has collaborated extensively with ASME BPV Code Sections II and VIII Divisions 1, 2, and 3 and ASME Post Construction Committees. He has been a member of the Subgroup on High Pressure Vessels (primarily responsible for Section VIII Division 3) for 15 years and chair for the past six years. He is a past chair of the ASME Pressure Vessel and Piping Division's High Pressure Technology Committee and the Pressure Vessels and Piping Division. He has authored or coauthored several papers in this area with subject matter including cycle life of pressure vessels and high pressure components and stress concentration factors at cross-bores of cylinders.

Brian E. Porter, P.E., PMP., has over a decade of experience in project management, product development, engineering, safety listings, patents, business strategy and start-up management in computer sales, consumer products, hazardous waste industry, industrial manufacturing and retail product markets. He has multiple patents within the US and numerous patents pending both domestically and internationally. Porter is a member of the Project Management Institute and has credentials as a project management professional (PMP) and is seeking his PgMP in the near future. His international efforts include working with firms in China, Canada, Mexico, Romania, Thailand, Malaysia, Australia, Japan, Sweden, Israel, Great Britain, Egypt, Italy, and Germany. He holds a BS in chemical engineering from the University of Illinois at Chicago and a MS in management with specialty in project management from Boston University.

A.S. (Abdulla) Rangwala, P.E., is a 30-year veteran in mechanical design and structural dynamics of compressors and gas turbines for aircraft engines, and steam and gas turbines for power plant applications. Currently technical director of the Machinery Dynamics Group of the Center for Engineering Technology, Rangwala is the author of the book, *Turbo Machinery Dynamic, Design and Operation*. He was also adjunct professor at Cincinnati State Technical College.

Rita M. Rizzo has over 22 years' experience as a training facilitator and consultant. Her consulting company is dedicated to helping small and medium sized organizations enhance their ability to recruit, inspire and retain quality employees and improve performance through training. She also provides training design and delivery services to training companies, the training departments of large companies and trade and professional associations.

Clay D. Rodery is pressure equipment technical authority with BP and has over 34 years of experience in the refining, chemicals and upstream engineering functions providing pressure equipment services including design, maintenance, inspection, and development and maintenance of codes, standards and specifications. He is the current chair of the ASME Post Construction Subcommittee on Flange Joint Assembly. Rodery has been a member of various ASME Codes and Standards Committees since 1997, including the ASME BPV Committee on Pressure Vessels, Subgroup on Design and Subgroup on Fabrication & Examination (where he was past chair) of ASME BPV Code Section VIII, the ASME Post Construction Standards Committee and Subcommittee on Repair and Testing. He is past team leader of the Process Industry Practices (PIP) Vessel Function Team. He is a member of the Design & Analysis Committee of the ASME Pressure Vessels and Piping Division and has contributed as a session developer, author, speaker, panelist and tutorial leader. Rodery earned his bachelor's degree from Purdue University. He is an ASME fellow and has received numerous awards.

Michael J. Rosenfeld, P.E., is Chief Engineer with Kiefner/Applus-RTD in Columbus, Ohio. He holds a BS in mechanical engineering from the University of Michigan (1979) and a MS in mechanical engineering from Carnegie-Mellon University (1981). The focus of Rosenfeld's career has been on oil and gas pipeline integrity since joining Kiefner & Associates, Inc. (KAI) as Senior Structural Engineer in 1991. He then served as President from 2001 to 2011. While at KAI, he performed numerous pipeline failure investigations, stress analyses of buried pipelines subjected to geotechnical and live loadings, fitness for service evaluations for pipelines affected by various degraded conditions, developed technical procedures for integrity management planning, and carried out industry-funded research on pipeline damage mechanisms. Rosenfeld is a current member of the ASME B31.8 Gas Transmission & Distribution Piping Section Committee, the ASME B31 Mechanical Design Technical Committee, the ASME B31 Standards Committee, and the ASME Board of Pressure Technology Codes & Standards. He was the primary author of the 2009 major revision to ASME B31G, is an ASME Fellow, and has authored a number of papers and articles on pipeline-related subjects.

C. Wesley Rowley, P.E., has over 40 years' experience in the nuclear, fossil and hydro power industries. He has provided technical and management support services to nuclear utilities, the US Department of Energy, the US Nuclear Regulatory Commission and the Electric Power Research Institute. Rowley's technical experience includes pre-operational startup testing, equipment testing and qualification, inservice testing (including RI-IST), containment testing, codes and standards compliance as well as maintenance plans development and implementation. Rowley is an ASME codes and standards expert. He was chair of the ASME Board on Nuclear Codes & Standards (VP-NC&S), and has held several positions in ASME Operations and Maintenance Committee, Post Construction Committee, and Boiler Pressure Vessel Committee.

Ranjit Roy, Ph.D., is an internationally known consultant and trainer of quality engineering techniques. He is the president of engineering quality and training company Nutek, Inc., which he established in 1987. Prior to starting consulting firm, Roy was employed with General Motors (1976-1987) at their Technical Center in Warren, Michigan where he served in various engineering responsibilities. He is the author of two textbooks on the Taguchi Method of quality improvement and of Qulitek-4 software for design and analysis of Taguchi experiments. Roy is a fellow of the American Society for Quality and an adjunct professor at Oakland University in Rochester, Michigan. He is listed in the Marquis Who's Who in the World.

Michael W. Salmon is the team leader for the Probabilistic Structural Mechanics Team, part of the Nuclear Design and Risk Analysis Group in the Decision Applications Division of the Los Alamos National Laboratory. Prior to joining LANL, Salmon served as a principal engineer at EQE Incorporated in Costa Mesa, CA, for seven years. Before that, he was employed as a staff engineer at ABB/Impell Incorporated and SMA/NTS in Southern California where he participated in a number of probabilistic risk assessments of commercial nuclear power plants for external events. Salmon has extensive experience in seismic risk assessment, dynamic analysis of structures and components and structural and component fragility analysis. He is currently serving as the chair of ASCE's Dynamic Analysis of Nuclear Structures Technical Committee. He holds a BS in civil/structural engineering from Purdue University, a MS in civil/structural engineering from the University of Illinois, and an MBA from Long Beach State University. Salmon is the author of several research and conference papers.

Adrian L. Sepeda, P.E., has more than 33 years' experience in the chemical industry. He retired from Occidental Chemical Corporation (OxyChem) in 2002 as its director of health, environment and safety risk management where he was responsible for process safety, risk management and accident investigations for OxyChem's worldwide operations. After retiring, Sepeda established his own consulting firm, specializing in process safety and risk management, teaching classes and rendering services to small and large corporations. He earned his BS in mechanical engineering from Lamar University in Beaumont, Texas and has held a PE license in Texas for over 38 years. He is also a life member of ASME and a CCPS emeritus member.

Clayton T. Smith, P.E., PMP, is an NQA-1 qualified lead auditor, multidiscipline NDE and QC Level III, and holds various ACI certifications. He serves on the ASME Board of Nuclear Codes and Standards, ASME Section III Standards Committee, Committee for Nuclear Certification, and as chair/vice chair, as well as being an active member, in many ACI, ASME, and AWS Standards Development Organization Committees. Finally, Smith is a member of ASME Nuclear Engineering Division (NED) Executive Committee, the Secretary of the NED Technical Committee 4, "Safety, Codes, Standards and Regulation," and a member of the Nuclear Power International Technical Program Committee. His 30-plus years' experience includes extensive 10 CFR Part 50, Appendix B, ACI, ASME Section III, ASME Section XI, and NQA-1 Quality Assurance program creation. He specializes in nuclear safety related, ASME Section III, Division 1 & 2 design, construction, and procurement; Section XI nuclear power plant repair and replacements, coupled with traditional non-nuclear ACI, ASME and AWS Code design, construction, fabrication & installation; and National Board Inspection Code (NBIC) alteration and repair activities. He is currently the technical services director and fellow in the nuclear power division of Fluor Enterprises, Inc.

William K. (Ken) Sowder, Ph.D., is a senior consultant to the nuclear industry. He works with manufacturers and suppliers to develop management systems which meet the requirements of codes and standards such as ASME NQA-1-2008, ISO 9001: 2008 and IAEA GS-R-3. Sowder worked for the ITER Project on-site in France from 2004-2007 as responsible officer and division head for ITER Quality Assurance, and from 2008-2009 as expert contractor reporting to the ITER's director general and deputy director general of safety and security. He helped develop the ITER interfaces with international organizations such as IAEA, JSME and ISO. In addition, he works with code and standard writing organizations such as ASME, JSME and IAEA. He is a member of Section III Committees, NQA-1 Committees, the ISO 9001 TC 176 US TAG and is an ASME BNCS member.

Walter J. Sperko, P.E., is president of Sperko Engineering Services, Inc., a consulting firm specializing in metal fabrication technology. He is chair of ASME Standards Committee IX and a member of several of its subgroups; a member of ASME Standards Committee III and its Subgroup on Materials, Fabrication and Examination; a member of the ASME B31 Standards Committee; and past chair of AWS International Standards Activities Committee, which represents the US at meetings of ISO/TC44, Welding and Allied Processes and a member of AWS Technical Activities Committee. He is a professional engineer registered in several states and holds five US patents.

C. (Raj) Sundararajan has spent more than 25 years analyzing and designing mechanical components, equipment, piping, and structures subjected to dynamic forces. Currently president of EDA Consultants, he has held senior technical positions at an architect-engineering company, an equipment vendor and a consulting firm. The author of more than 50 technical papers and reports, Sundararajan received the ASME Best Paper Award in 1986.

Rick Swayne is a senior consultant with Reedy Engineering. He has worked in many different areas of the nuclear power industry for over twenty years. Swayne has experience in design, fabrication, quality assurance, inservice inspection, and repair, replacement, and modification activities.

John P. Swezy, Jr., has over 35 years' experience in steam and combustion driven prime mover electrical generation plants and associated engineering auxiliary systems, and over 20 years' in developing and implementing detailed procedures, work instructions, and QC programs for design, welded fabrication, repairs, and alterations of pressure equipment following ASME, B31, NBIC, API, DOT and various International codes and standards. He also has extensive experience in the area of nondestructive examination. Swezy has been a member of various ASME Codes & Standards committees since 1996. He is a National Board commissioned boiler and pressure vessel inspector and an American Welding Society certified welding inspector (CWI). He is recognized for his expertise with the ASME Code rules of Section VIII, Divisions 1 and 2 as they apply to toughness, fabrication, and examination of pressure vessels. He is past chair of the Subgroup on Toughness, newly elected as chair of the Subgroup on Fabrication and Examination, and member of the Standards Committee for Pressure Vessels. He is also a member of the Standards Committee for Welding, Brazing, and Fusing; the ASME B31 Piping Standards Committee; and is chair of the B31 Fabrication and Examination Technical Committee. Swezy was presented the ASME Dedicated Service Award in 2013.

David Thornton, P.E., principal engineer and technical advisor, Equity Engineering Group, has over 35 years' experience as a specialist in pressure vessel, piping, and tank design/analysis. He has worked both as an owner-user, and a consultant, providing engineering support to refineries and chemical plants worldwide. Currently with the Equity Engineering Group, his work has included mechanical engineering quality control for a \$500 million clean fuels expansion of a Middle East refinery, FFS evaluations, fracture mechanics evaluations, high temperature creep analysis and life assessment, fatigue, structural reliability and risk assessment, etc. He is also responsible for training engineers and inspectors in API Fitness-For-Service API 579-1/ASME FFS-1, Pressure Vessel Design, and Piping Design and Analysis. Thornton serves as a member of the joint API/ASME technical committee responsible for the development of FFS assessment techniques. He earned his BS in civil engineering at Drexel University and his MS in theoretical and applied mechanics at Cornell University.

Ed Wilcox is a staff machinery engineer with the Energy Technology Company (ETC) of Chevron. Previously he worked for Conoco and Lyondell Chemical as a machinery engineer. He has a BS in mechanical engineering from the University of Missouri-Rolla and a BS from Oklahoma State University. Wilcox is a Vibration Institute category IV vibration specialist and a registered professional engineer in the state of Oklahoma.

Bob Wilson is an engineering consultant with TWD Technologies in Burlington, Ontario, Canada and former engineering professor at Sheridan College. He is a member of the B31.1 Power Piping Section Sub Group on Design. Wilson has taught piping design and engineering courses for 30 years. He has been involved with the design, analysis, layout and support of piping systems since 1963, with petrochemical, power, steel, mining and processing companies in North America and Europe and is currently working as a piping stress engineer with experience in Caesar II, Caepipe and Autopipe analysis programs. Wilson is the author of Detail Engineering and Layout of Piping Systems and is former chair of ASME's Ontario Section.

Andrew Wolosik is the piping lead designer with Teng & Associates in Mississauga, Ontario, Canada. He has over 14 years' experience in the oil and gas refining and petrochemical industries. He has worked for world class EPCM companies, such as Bechtel/Bantrel and AMEC, where he has been involved in plant layout for large to small projects, including assignments in the United Kingdom and China. Wolosik has extensive experience in CAD coordination, estimating, 3D modeling, plant layout and 3D model design reviews, and has worked with and managed AutoPlant and PDS software systems. Additionally, he is Six Sigma certified.

Glynn E. Woods, P.E., has spent more than 30 years sharing his extensive piping expertise with petrochemical and power plants. He employs computer evaluations and field experience to arrive at safe, economical piping designs and solutions to piping problems. Woods is an active member of ASME's Pressure Vessels and Piping Division.

Carl Zweben, Ph.D., has over 40 years' commercial and aerospace experience in composite materials technology. He pioneered a wide range of commercial and aerospace composite applications, including machine components, thermal management, microelectronic and optoelectronic packaging, spacecraft and aircraft structures, automobiles, wind turbines, pressure vessels, and weapon systems.

BOILERS AND PRESSURE VESSELS		PG	FEB	MARCH	APRIL	MAY	JUNE
PD394	Seismic Design and Retrofit of Equipment and Piping	7	San Antonio 15-18			Las Vegas 2-5	
PD389	Nondestructive Examination - Applying ASME Code Requirements (BPV Code, Section V) ASME STANDARDS COURSE	6		Las Vegas 7-9		Atlanta 23-25	
PD395	API 579-1/ASME FFS – Fitness-for-Service	7		Las Vegas 7-9	New Orleans 11-13		Houston 6-8
PD442	BPV Code, Section VIII, Division 1: Design and Fabrication of Pressure Vessels ASME STANDARDS COURSE TOP SELLER!	2		Las Vegas 7-9	Seattle 18-20	Atlanta 23-25	
PD443	BPV Code, Section VIII, Division 1 Combo Course ASME STANDARDS COURSE (combines PD441 and PD442) SAVE UP TO \$680 TOP SELLER!	2		Las Vegas 7-11	New Orleans 11-15 Seattle 18-22	Atlanta 23-27	
PD583	Pressure Relief Devices: Design, Sizing, Construction, Inspection & Maintenance ASME STANDARDS COURSE	3		Las Vegas 9-11			Houston 8-10
PD441	Inspections, Repairs and Alterations of Pressure Equipment ASME STANDARDS COURSE	2		Las Vegas 10-11	New Orleans 14-15 Seattle 21-22	Atlanta 26-27	
PD382	How to Predict Thermal-Hydraulic Loads on Pressure Vessels & Piping	5		Orlando 21-22		Atlanta 26-27	
PD077	Failure Prevention, Repair & Life Extension of Piping, Vessels and Tanks	6, 67		Orlando 21-23		Atlanta 23-25	
PD622	BPV Code: Plant Equipment Requirements ASME STANDARDS COURSE	4		Orlando 21-24			
PD146	Flow Induced Vibration with Applications to Failure Analysis	5			Seattle 18-20		
PD665	BPV Code, Section I: Power Boilers ASME STANDARDS COURSE	4			New Orleans 11-15		Houston 6-10
PD448	BPV Code, Section VIII, Division 2: Pressure Vessels ASME STANDARDS COURSE	3					Houston 6-9
MC138	Workshop: Using ASME RAM Standards to Establish a Reliability, Availability and Maintainability (RAM) Program for Critical Systems and Power Plants NEW! MasterClass Series/ASME STANDARDS COURSE	14, 73	Las Vegas 14				
MC136	Developing Effective Bolted Flange Joint Assembly Procedures Using ASME PCC-1 NEW! MasterClass Series/ASME STANDARDS COURSE	12, 71	Las Vegas 14-15				
MC132	Run-or-Repair Operability Decisions for Pressure Equipment and Piping Systems Using ASME PCC-2 NEW! MasterClass Series/ASME STANDARDS COURSE	12, 71	Las Vegas 16-17				
MC137	Creating and Implementing Effective Inspection Plans for Pressure Equipment & High Energy Piping Systems Using ASME PCC-3 NEW! MasterClass Series/ASME STANDARDS COURSE	13, 72	Las Vegas 18				
MC127	Design Requirements for High Pressure Vessels in ASME Code Section VIII, Division 3 MasterClass Series/ASME STANDARDS COURSE	70	Las Vegas 18-19				
MC104	Bases and Application of Heat Exchanger Mechanical Design Rules in Section VIII of the ASME Boiler and Pressure Vessel Code MasterClass Series/ASME STANDARDS COURSE	8				Orlando 8-9	
MC121	Design by Analysis Requirements in ASME Boiler and Pressure Vessel Code Section VIII, Division 2 – Alternative Rules MasterClass Series/ASME STANDARDS COURSE	8				Orlando 10-11	
MC113	Techniques and Methods Used in API 579-1/ASME FFS-1 for Advanced Fitness-For-Service (FFS) Assessments MasterClass Series/ASME STANDARDS COURSE	9				Orlando 12-13	

BOLTING		PG	FEB	MARCH	APRIL	MAY	JUNE
PD539	Bolted Joints and Gasket Behavior	17	San Antonio 15-16		Seattle 18-19	Atlanta 23-24	
PD601	Bolting Combo Course (combines PD539, PD396 and PD577) SAVE UP TO \$1,275!	17	San Antonio 15-19		Seattle 18-22	Atlanta 23-27	
PD386	Design of Bolted Flange Joints	17	San Antonio 17		Seattle 20	Atlanta 25	
PD577	Bolted Joint Assembly Principles Per PCC-1-2013 ASME STANDARDS COURSE	18	San Antonio 18-19		Seattle 21-22	Atlanta 26-27	

DESIGN & MATERIALS		PG	FEB	MARCH	APRIL	MAY	JUNE
PD231	Shock and Vibration Analysis	22		Las Vegas 7-9			
PD513	TRIZ The Theory of Inventive Problem Solving	21, 47		Las Vegas 7-9		Atlanta 23-25	
PD567	Design, Analysis and Fabrication of Composite Structure, Energy and Machine Applications	20		Orlando 21-22			
PD683	Probabilistic Structural Analysis, Design and Reliability-Risk Assessment	22			New Orleans 11-13		
PD410	Detail Engineering of Piping Systems	23			New Orleans 11-13		Houston 6-8
PD571	The Taguchi Design of Experiments for Robust Product and Process Designs	23			Seattle 18-20		
PD268	Fracture Mechanics Approach to Life Predictions	21				Las Vegas 2-4	
PD432	Turbo Machinery Dynamics: Design & Operation	20					Houston 6-10

ELEVATORS AND ESCALATORS		PG	FEB	MARCH	APRIL	MAY	JUNE
PD107	Elevator Maintenance Evaluation	27		Las Vegas 7-8			
PD100	Introduction to the Maintenance & Inspection of Elevators and Escalators	26			New Orleans 11-12	Las Vegas 2-3	
PD602	Elevator and Escalator Combo Course (combines PD100 and PD102) SAVE UP TO \$905!	26			New Orleans 11-15	Las Vegas 2-6	
PD102	ASME A17.1 Safety Code and A17.2 Inspection Requirements ASME STANDARDS COURSE	26			New Orleans 13-15	Las Vegas 4-6	

FLUIDS AND HEAT TRANSFER		PG	FEB	MARCH	APRIL	MAY	JUNE
PD679	Selection of Pumps and Valves for Optimum System Performance	32	San Antonio 15-18		Seattle 18-21		
PD764	Introduction to Hydraulic Systems	34		Las Vegas 7-10	New Orleans 11-14		
PD624	Two-Phase Flow and Heat Transfer	32		Orlando 21-22		Las Vegas 5-6	
PD763	Centrifugal Pumps: Testing, Design and Analysis	31		Orlando 21-23		Atlanta 23-25	Houston 6-8
PD673	Design and Selection of Heat Exchangers	33		Orlando 24-25		Atlanta 26-27	Houston 9-10
PD584	Centrifugal Compressor Performance Analysis	31		Orlando 24-26			
PD691	Fluid Mechanics, Piping Design, Fluid Transients and Dynamics	34			New Orleans 11-14		
PD690	Economics of Pipe Sizing and Pump Selection	33			New Orleans 14-15		
PD027	Heating, Ventilating and Air-Conditioning Systems: Sizing and Design	30				Atlanta 23-25	
PD657	HVAC Systems and Chiller Performance Combo Course (combines PD027 and PD387) SAVE UP TO \$440!	30				Atlanta 23-26	
PD387	Understanding Chiller Performance, Operation and Economics	30				Atlanta 26	

GAS TURBINES		PG	FEB	MARCH	APRIL	MAY	JUNE
PD765	Gas Turbine Engines – Controlling Pollutants	37	San Antonio 15-17				Houston 6-8
PD115	The Gas Turbine: Principles and Applications	36		Las Vegas 10-11			Houston 6-7

GEOMETRIC DIMENSIONING AND TOLERANCING		PG	FEB	MARCH	APRIL	MAY	JUNE
PD570	Geometric Dimensioning and Tolerancing Fundamentals 1 ASME STANDARDS COURSE	38		Las Vegas 7-8	Seattle 18-19		Houston 6-7
PD603	GD&T Combo Course (combines PD570 and PD561) SAVE UP TO \$825!	38		Las Vegas 7-10	Seattle 18-21		Houston 6-9
PD561	Geometric Tolerancing Applications and Tolerance Stacks	38		Las Vegas 9-10	Seattle 20-21		Houston 8-9
PD449	Mechanical Tolerancing for Six Sigma	39		Las Vegas 10-11			
PD515	Dimensioning and Tolerancing Principles for Gages and Fixtures	39		Orlando 21-23			

LEGAL ISSUES FOR ENGINEERS		PG	FEB	MARCH	APRIL	MAY	JUNE
PD674	International Business Ethics and Foreign Corrupt Practices Act	41			New Orleans 11-13		
PD681	International Business Ethics and Foreign Corrupt Practices Act Combo Course (combines PD674 and PD680) SAVE UP TO \$650!	41			New Orleans 11-15		
PD680	Understanding the Foreign Corrupt Practices Act	41			New Orleans 14-15		

MANAGING PEOPLE		PG	FEB	MARCH	APRIL	MAY	JUNE
PD475	The Engineering Manager: Engaging Today's Workforce	42		Las Vegas 7-8		Atlanta 23-24	
PD685	The Engineering Manager: Engaging Today's Workforce and Strategic Thinking Combo Course (combines PD475 and PD676) SAVE UP TO \$450!	42		Las Vegas 7-9		Atlanta 23-25	
PD676	Strategic Thinking	42		Las Vegas 9		Atlanta 25	
PD692	Communication Essentials for Engineers	43		Orlando 21-22			
PD531	Leadership and Organizational Management	44			New Orleans 11-12		
PD506	Effective Management of Research and Development Teams and Organizations	44			New Orleans 11-13	Las Vegas 2-4	
PD620	Core Engineering Management	45			New Orleans 11-14		
PD575	Comprehensive Negotiating Strategies®: Engineers and Technical Professionals	43				Las Vegas 5-6	

MANAGING PROJECTS		PG	FEB	MARCH	APRIL	MAY	JUNE
PD467	Project Management for Engineers and Technical Professionals	46	San Antonio 15-17			Las Vegas 2-4	
PD629	Project Management Combo Course (combines PD467 and 496) SAVE UP TO \$450!	46	San Antonio 15-19			Las Vegas 2-6	
PD496	Preparing for the Project Management Professional Certification Exam	46	San Antonio 18-19			Las Vegas 5-6	
PD513	TRIZ The Theory of Inventive Problem Solving	21, 47		Las Vegas 7-9		Atlanta 23-25	

NUCLEAR		PG	FEB	MARCH	APRIL	MAY	JUNE
PD632	Design in Codes, Standards and Regulations for Nuclear Power Plant Construction ASME STANDARDS COURSE	52	San Antonio 15-18			Las Vegas 2-5	
PD675	ASME NQA-1 Lead Auditor Training	55	San Antonio 15-18			Las Vegas 2-5	
PD184	BPV Code, Section III, Division 1: Rules for Construction of Nuclear Facility Components ASME STANDARDS COURSE TOP SELLER!	50		Las Vegas 7-10		Atlanta 23-26	
PD192	BPV Code: Section XI: Inservice Inspection of Nuclear Power Plant Components ASME STANDARDS COURSE	51		Orlando 21-25			
PD711	ASME NQA-1 and DOE Quality Assurance Rule 10 CFR 830 ASME STANDARDS COURSE	53		Orlando 21-23	Seattle 18-20		
PD633	Overview of Nuclear Codes and Standards for Nuclear Power Plants ASME STANDARDS COURSE	52			New Orleans 11-13		
PD644	Advanced Design and Construction of Nuclear Facility Components per BPV Code, Section III ASME STANDARDS COURSE	51			New Orleans 11-14		
PD615	BPV Code, Section III, Division 1: Class 1, 2 & 3 Piping Design ASME STANDARDS COURSE	50			Seattle 18-20		Houston 6-8
PD597	Risk-Informed Inservice Testing	54			Seattle 20-22		
PD598	Developing a New Inservice Testing Program	54				Las Vegas 2-6	
PD606	NQA-1 Requirements for Computer Software used in Nuclear Facilities ASME STANDARDS COURSE	53				Atlanta 26-27	

PIPING AND PIPELINES		PG	FEB	MARCH	APRIL	MAY	JUNE
PPD014	ASME B31.3 Process Piping Design ASME STANDARDS COURSE	62	San Antonio 15-18		Seattle 18-21	Atlanta 23-26	
PD581	B31.3 Process Piping Design, Materials, Fabrication, Examination and Testing Combo Course ASME STANDARDS COURSE (combines PD014 and PD457) SAVE UP TO \$575! TOP SELLER!	62	San Antonio 15-19		Seattle 18-22	Atlanta 23-27	
PD457	B31.3 Process Piping Materials Fabrication, Examination and Testing ASME STANDARDS COURSE TOP SELLER!	62	San Antonio 19		Seattle 22	Atlanta 27	
PD706	Inline Inspections for Pipelines	66		Las Vegas 7-8			Houston 6-7
PD720	Layout of Process Piping Systems	65		Las Vegas 7-9		Atlanta 23-25	
PD686	Layout of Process Piping Systems and Optimization of Plant Layouts Utilizing 3D CAD/CAE Systems Combo Course (combines PD720 and PD721) SAVE UP TO \$650! NEW!	65		Las Vegas 7-11		Atlanta 23-27	
PD721	Optimization of Plant Layouts Utilizing 3D CAD/CAE Systems	65		Las Vegas 10-11		Atlanta 26-27	
PD077	Failure Prevention, Repair & Life Extension of Piping, Vessels and Tanks	6, 67		Orlando 21-23		Atlanta 23-25	
PD013	B31.1 Power Piping Code ASME STANDARDS COURSE	63		Orlando 21-25		Las Vegas 2-6	
PD410	Detail Engineering of Piping Systems	66			New Orleans 11-13		
PD445	B31 Piping Fabrication and Examination ASME STANDARDS COURSE	63			New Orleans 11-12		
PD621	Grade 91 and Other Creep Strength Enhanced Ferritic Steels	67			New Orleans 13-15		
PD593	FRP Pressure Piping Construction Process	68			Seattle 18-19		
PD391	ASME B31.4 Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids ASME STANDARDS COURSE	64			Seattle 18-19	Las Vegas 2-3	
PD370	B31.8 Gas Transmission and Distribution Piping Systems ASME STANDARDS COURSE	64				Las Vegas 2-4	
PD766	Post Weld Heat Treatments In ASME Codes	68				Atlanta 25-26	
MC138	Workshop: Using ASME RAM Standards to Establish a Reliability, Availability and Maintainability (RAM) Program for Critical Systems and Power Plants NEW! MasterClass Series/ASME STANDARDS COURSE	14, 73	Las Vegas 14				
MC136	Developing Effective Bolted Flange Joint Assembly Procedures Using ASME PCC-1 NEW! MasterClass Series/ASME STANDARDS COURSE	12, 71	Las Vegas 14-15				
MC132	Run-or-Repair Operability Decisions for Pressure Equipment and Piping Systems Using ASME PCC-2 NEW! MasterClass Series/ASME STANDARDS COURSE	12, 71	Las Vegas 16-17				
MC137	Creating and Implementing Effective Inspection Plans for Pressure Equipment & High Energy Piping Systems Using ASME PCC-3 NEW! MasterClass Series/ASME STANDARDS COURSE	13, 72	Las Vegas 18				
MC127	Design Requirements for High Pressure Vessels in ASME Code Section VIII, Division 3 MasterClass Series/ASME STANDARDS COURSE	12, 70	Las Vegas 18-19				
MC111	Piping Vibration Causes and Remedies – A Practical Approach MasterClass Series/ASME STANDARDS COURSE	69				Orlando 11-12	
MC117	Piping Failures - Causes and Prevention MasterClass Series/ASME STANDARDS COURSE	70				Orlando 13	
PROCESS SAFETY		PG	FEB	MARCH	APRIL	MAY	JUNE
PD702	Process Safety and Risk Management for Mechanical Engineers ASME STANDARDS COURSE	76		Orlando 21-23			
RISK AND RELIABILITY		PG	FEB	MARCH	APRIL	MAY	JUNE
PD618	Root Cause Analysis Fundamentals	78		Las Vegas 7-9			
PD591	Developing Conflict Resolution Best Practices	78		Las Vegas 10-11			
PD619	Risk and Reliability Strategies for Optimizing Performance	79					Houston 6-8
WELDING		PG	FEB	MARCH	APRIL	MAY	JUNE
PD190	BPV Code, Section IX: Welding, Brazing and Fusing Qualifications ASME STANDARDS COURSE	80		Las Vegas 7-9		Atlanta 25-27	
PD359	Practical Welding Technology	80		Orlando 21-24	Seattle 18-21	Atlanta 23-26	

VENUES AND HOTELS

SAN ANTONIO, TEXAS USA FEBRUARY 15-19, 2016

Sheraton Gunter Hotel San Antonio

205 East Houston St • San Antonio, TX 78205

Telephone: +1.210.227.3241

Website: www.sheratongunter.com

Hotel Rate Information: \$179 plus local taxes and fees, currently 16.75 %. This rate is available until January 22, 2016. For reservations, please call +1.888.999.2089 and mention ASME to receive this special rate.

LAS VEGAS, NEVADA USA MARCH 7-11, 2016

Harrahs

3475 Las Vegas Boulevard South • Las Vegas, NV 89109 USA

Telephone: +1.800.214.9110

Website: www.harrahs.com

Hotel Rate Information: \$119 plus local taxes and fees, currently 12%. This rate is available until Thursday, February 4, 2016. Please call +1.888.458.8471 and mention ASME to receive this special rate.

ORLANDO, FLORIDA USA MARCH 21-25, 2016

Hyatt Regency Orlando

9801 International Drive • Orlando, FL 32819

Telephone: +1.407.284.1234

Website: www.orlando.regency.hyatt.com

Hotel Rate Information: \$209 plus local taxes and fees, currently 1%. This rate is available until February 28, 2016. For reservations, please call +1.888.421.1442. Please mention ASME to receive this special group rate.

NEW ORLEANS, LOUISIANA USA APRIL 11-15, 2016

Hyatt Regency New Orleans

601 Loyola Avenue • New Orleans, LA 70113

Telephone: +1.504.561.1234

Website: www.neworleans.hyatt.com

Hotel Rate Information: \$249 plus local taxes and fees, currently 13%. This rate is available until March 18, 2016. To make a reservation and receive the special ASME rate, please call hotel at +1.888.421.1442 and mention ASME.

SEATTLE, WASHINGTON USA APRIL 18-22, 2016

Fairmont Olympic Hotel Seattle

411 University Street • Seattle, Washington 98101

Telephone: +1.206.621.1700

Website: www.fairmont.com/seattle

Hotel Rate Information: \$239 plus local taxes and fees, currently 15.6%. This rate is available until March 28, 2016. For reservations, please call +1.206.621.1700, extension 3131. Please mention ASME to receive this special group rate.

LAS VEGAS, NEVADA USA MAY 2-6, 2016

Harrahs

3475 Las Vegas Blvd South • Las Vegas, NV 89109

Telephone: +1.800.214.9110

Website: www.harrahs.com

Hotel Rate Information: \$119 plus local taxes and fees, currently 12%. This rate is available until Thursday, March 31, 2016. Please call +1.888.458.8471 and mention ASME to receive this special rate.

ATLANTA, GEORGIA USA MAY 23-27, 2016

Westin Peachtree Plaza

210 Peachtree St NW • Atlanta, GA 30303

Telephone: +1.404.659.1400

Website: www.westinpeachtreeplazaatlanta.com

Hotel Rate Information: \$209 plus local taxes and fees, currently 16%. This rate available until April 22, 2016. For room reservations at the special ASME rate, please call +1.404.659.1400 and mention ASME.

HOUSTON, TEXAS USA JUNE 6-10, 2016

Wyndham Houston West – Energy Corridor

14703 Park Row Boulevard • Houston, TX 77079

Telephone: +1.281.406.1009

Website: www.wyndhamhoustonwest.com

Hotel Rate Information: \$179 plus local taxes and fees, currently 17%. This rate is available until Monday, May 16, 2016. For reservations, please call +1.1.800.996.3426 and mention ASME to receive this special rate.



97%*

rate the course they attended
as "very or extremely
relevant to my job."

* ASME Course Evaluation Survey completed between
July 2012 and June 2014 by 4,401 participants

HOW TO REGISTER

Specific information is listed on the **ASME Product Catalog webpage**.

PAYMENT OPTIONS

Payment can be made by credit card, check or bank transfer – which ever is more convenient for you. For international funds transfer, please contact **CustomerCare@asme.org**

DISCOUNTS? WE HAVE THEM!

Team discount: Send three people to the same course and save 10%. Send two people to the same course and save 5%. Teams must register simultaneously. Call +1.800.843.2763 to register.

Do you have ten or more individuals interested in a specific course? Call **ASME In-Company Training** at +1.212.591.7843 to learn more about customized training options held at your place of business.

Student discount: A full-time undergraduate student saves 50%.

Lifetime ASME Member discount: Lifetime Members save 50%.

Don't forget your tax deduction! Training taken to maintain or improve professional skills is typically tax-deductible. Consult with your tax advisor for applicability.

ASME TRAVEL POLICY

ASME is not responsible for the purchase of non-refundable airline tickets or the cancellation/change fees associated with canceling a flight. ASME encourages attendees to call and confirm whether a specific course is running before purchasing airline tickets. ASME retains the right to cancel a course until 3 weeks prior to the scheduled presentation date.

HOTEL INFORMATION

Some ASME courses may be held at a venue where special room rates have been negotiated. Specific information will be listed in the **ASME Product Catalog** or may be obtained by calling an ASME registration specialist when registering for a course. To ensure accessibility to discounted rates, mention ASME when making your reservations with a designated hotel.

See **Venues and Hotels** on page 96 for more information.

DID YOU GET YOUR CONFIRMATION EMAIL?

ASME confirms every course registration by email. If you have not received confirmation after registering for an ASME Public Course, call +1.800.843.2763.

CONTINUING EDUCATION UNITS (CEUs):

ASME Training & Development is accredited by the International Association for Continuing Education and Training (IACET). ASME Training & Development complies with the ANSI/IACET Standard, which is recognized internationally as a standard of excellence in instructional practices. As a result of this accreditation, ASME Training & Development is authorized to issue the IACET CEU.

CAN'T MAKE YOUR SCHEDULED COURSE?

If you are unable to attend your registered course, simply send a substitute or opt to transfer to another course. Contact +1.800.843.2763 to transfer. All transfers are subject to space allocation.

No Shows are responsible for payment and will be invoiced at full course price. Please see our refund policy below for more details.

ASME REFUND POLICY / CANCELLATION POLICY

If for any reason you should not be able to attend, ASME will give you a complete refund up to 21 days prior to the start date of the course. Cancellations made less than 21 days before the first day of the course forfeit the full course fee. Substitutions are welcome. All cancellations must be received via email to **CustomerCare@asme.org**. Applicable refunds will be made in the same manner as the original payment was received. ASME retains the right to cancel a course until 3 weeks prior to the scheduled presentation date.

COURSE TIMES AND REFRESHMENTS

Registration runs from 7:30 a.m. to 8:25 a.m. Courses run from 8:30 a.m. to 5 p.m. unless otherwise noted. **Complimentary continental breakfast and lunch now available to all attendees.**

FREE FIRST YEAR ASME MEMBERSHIP

Public Course attendees without a current membership affiliation with ASME may apply for a free one-year ASME membership. Ask for details at the on-site course registration desk.

DRESS

Casual business attire

SATISFACTION GUARANTEED!

ASME guarantees the quality of our courses. If, for any reason you are not satisfied with a course you have attended, ASME will credit your record with an offer to attend another professional development course of comparable price. ASME will not refund your registration fee.

SPECIAL REQUIREMENTS?

In accordance with the Americans with Disabilities Act, do you have any special needs? If so, please contact Marian Hess at +1.212.591.7161 or email to **hessm@asme.org**. ASME will be happy to accommodate your request to the best of our ability.

PERSONAL PROPERTY

Attendees are responsible for all personal belongings during the length of the course while in hotel and other meeting space; this includes all breaks, lunch, and overnight accommodations. ASME does not assume responsibility for any missing or damaged articles.

ADDITIONAL INFORMATION

- Statements made by instructors do not represent the position of ASME
- No audio-recording or videotaping is permitted
- ASME reserves the right to substitute an instructor(s)
- Course prices are subject to change without notice

ASME does not discriminate in employment, admission to membership or admission of speakers or registrants to its programs or activities on the basis of race, color, religion, gender, age, mental illness, sexual orientation, disability, national or ethnic origin, veteran status or any other basis prohibited by state or local law.



Two Park Avenue
New York, NY
10016-5990 U.S.A.

ASME Offices

Headquarters

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

Customer Care

Overlook Corporate Center
150 Clove Road
Little Falls, New Jersey 07424-2138 U.S.A.
Tel: +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.
Tel: +1.202.785.3756
Fax: +1.202.429.9417
Email: holguinj@asme.org

International Petroleum Technology Institute

11757 Katy Freeway
Suite 380
Houston, TX 77079-1733 U.S.A.
Tel: +1.281.493.3491
+1.866.276.3738
Fax: +1.281.493.3493
Email: ipti@asme.org

Europe

Boulevard du Souverain 280
1160 Brussels, Belgium
Tel: +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
Tel: +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
Tel: +91.124.430.8411
Fax: +91.124.430.8207
Email: sharmam@asme.org

The ASME Foundation

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



PMZCATANS