

**PD442****ASME BPV Code, Section VIII, Division 1: Design and Construction****CEUs: 2.3****PDHs: 23.0****Number of Days: 3**

Are you tasked with the design or fabrication of pressure vessels, but are not sure where to begin with code requirements? This course is a comprehensive introduction to the requirements of the current Edition of the ASME Boiler and Pressure Vessel Code (B&PVC), Section VIII, Division 1. Beginning with a unique insight into the background and organization of the code, the course will then focus on the design and construction requirements of the code. Participants will also explore requirements applicable to materials, fabrication, inspection, testing, and certification of pressure vessels. The course highlights the most commonly applied subsections, paragraphs, and appendices.

This course focuses on the design, fabrication, and certification of pressure vessels with respect to BPVC VIII-1. In this course, participants will perform relevant example calculations on Appendix 2 flanges, nozzle reinforcement, and much more! Real world case studies highlight areas such as Opening Reinforcements/ Nozzle Reinforcement and Appendix 2 Bolted Flange Calculation.

**By participating in this course, you will learn how to successfully:**

- Describe scope, purpose, and organization of the Code.
- Define allowable materials, explain how to reclassify materials and identify material traceability requirements.
- Explain how to apply the Code rules to common design and fabrication situations.
- Identify the calculations for some of the loadings and situations not addressed by the Code.
- Describe the preparation of design specifications, design reports, data reports, and other documentation.

**Who should attend?**

This course is designed primarily for beginners as well as, experienced vessel designers who would like to update their knowledge with the latest version of the Code.

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.

**Topics covered in this course include:**

- Introduction to ASME Codes and Section VIII
- General Design Requirements
- Design for cylindrical shells, dished heads, Flat Heads, Covers and Openings for internal and external pressure

- Fabrication, Testing, Welding, and Examination
- Requirements for Steels and Heat-Treated Materials

**Course Materials (included in purchase of course)**

- Participants will receive digital access to BPVC Section VIII, Division 1: Rules for Construction of Pressure Vessels, for the duration of the course.
- ASME BPVC, Section VIII, Division 2: Rules for Construction of Pressure Vessels - Alternative Rules
- ASME Boiler & Pressure Vessel Code, Section II.D: Properties (Customary)
- **Digital course notes** via ASME's Learning Platform

**Special features include:**

- An Overview of Code Organization
- Overview of Updated Editions

**Supplemental Course Materials (not included with course, purchase separately)**

- A calculator is required.

### **Module 1: Introduction to ASME Boiler & Pressure Vessel (BPV) Code and Section VIII Editions, Interpretations, and Code Cases**

- Foreword
- Responsibilities
- Scope
- Comparison between Divisions 1 and 2

### **Module 2: Materials Requirements**

- Code accepted materials
- Exceptions to material requirements
- Recertification of materials
- Basis for allowable stresses
- Other material properties

### **Module 3: General Design Requirements**

- Stresses and Load Conditions
- Joint Types and Efficiencies
- Joint Categories
- Alternate Design Rules
- Rules for Pressure Vessel Designers
- Mandatory Appendices
- Nonmandatory Appendices

### **Module 4: Design for Internal Pressure**

- Cylindrical Shells
- Spheres
- Formed Heads
- Flat Heads and Covers
- Openings and Reinforcement

### **Module 5: Design for External Pressure and Buckling**

- Axial Compression
- External Pressure applied to
- Cylinders
- Formed heads
- Spheres
- Design of stiffening rings

### **Module 6: Fabrication Requirements**

- Cutting and forming
- Shape Tolerances
- Inspection Requirements
- Special Service Requirements
- Design of welded joints
- Postweld Heat Treatment (PWHT)
- Nondestructive Examination (NDE)

**Module 7: Requirements for Carbon, High Alloy, and High Strength Steels**

- Fabrication
- Specific Heat Treatment Requirements
- Toughness Requirements
- Toughness Testing Exemptions
- High Alloy Steels
- High Strength Steels

**Module 8: Testing, Stamping, Data Reports, and Pressure Relief**

- Pressure Test Requirements
  - Hydrostatic
  - Pneumatic
- Applying the ASME Mark
- Manufacturers Data Reports
- Pressure relief requirement