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Schools Receive a 20% Educational Discount
COMPLETE TRAINING COURSE OVERVIEW

Each Complete Course Includes:
an instructor’s guide; DVD(s), one student workbook, one technical guide, tests & answer keys.

• Instructor’s Guide
  With comprehensive instructions for implementing each topic.

<table>
<thead>
<tr>
<th>Topic/Objective</th>
<th>Training Time</th>
<th>Materials/ Settings</th>
<th>Testing Method</th>
<th>Suggestions/Notes/Cautions for the Instructor</th>
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<tr>
<td>Arc Welding Safety</td>
<td>1-Hr</td>
<td>DVD 1, Topic 3 (11 min. 13 sec.)</td>
<td>Written test based on ANSI Z49.1 (for AWS ES2.0 and QC-10 compliance).</td>
<td>Introduce this topic by paraphrasing the following. Every year, hundreds of people die due to fires because they, or someone they work with, fail to follow proper safety procedures.</td>
</tr>
<tr>
<td>Student Workbook, Topic 3, Page 9.5</td>
<td></td>
<td></td>
<td>AND/OR Oral Quiz</td>
<td>Think about it. One day the pressure is on to get a job done. You’ve been the job for many hours and, before it seems routine, you decide to take a few short cuts. The next day you find yourself in hospital bed with third degree burns, or perhaps you’ve lost the use of your legs and will never walk again. Look after your safety and those around you. Follow safe work procedures.</td>
</tr>
</tbody>
</table>

• DVDs

• Answer Keys for Written Test
  Answer keys for each written test make it easy for instructors to measure student mastery of key concepts. (50 copies of each written test are shipped with each complete course.)

• One Student Workbook
  Featuring easy to follow practice sessions based on video demonstrations and summaries of essential theory.

• One Technical Guide
  An individual resource for instructors and students, each technical guide contains process specific information on equipment, process variables, weldability, pre- and post-weld procedures, shielding gases, electrodes, safety and more.
COMPLETE TRAINING COURSES

Shielded Metal Arc Welding
The Shielded Metal Arc Welding program is a complete training program. The fundamentals of shielded metal arc welding are covered in the basic program. It provides training in all positions, on mild steel with single and multipass welds. SMAWA-1 (Structural) teaches welding on single V-groove welds on carbon steel with multipass welds in all positions with backing strips. SMAWA-2 (Pre-pipe) teaches welding on single V-groove welds with open root on carbon steel with multipass welds in all positions. SMAWA-2 is in preparation for the transition to pipe welding. There are three pipe welding courses, 2” Pipe Uphill, 6” Pipe Uphill and 6” Pipe Downhill.

Shielded Metal Arc Welding Basic Updated 2019
Complete Course: 4 DVDs (3 hrs. 47 min); 1 Instructor Guide; 5 written tests, 50 copies each

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Topics
1. Shielded Metal Arc Welding Basic, Course Overview
2. Introduction to Shielded Metal Arc Welding
3. Arc Welding Safety
4. The Five Essentials
5. Striking & Controlling the Arc
6. Pad of Beads, Flat Position, E6013
7. Pads of Beads, Flat Position, E6010
8. Pads of Beads, Horizontal Position, E6010
9. The Welders Role In Quality Control
10. Fillet Weld, Lap Joint, Horizontal Position, E6013
11. Fillet Weld, Lap Joint, Horizontal Position, Uphill, E6010
12. Fillet Weld, Lap Joint, Horizontal Position, E6010
13. Electrode Selection
14. Three-Bead Fillet Weld, T-joint, Horizontal Position, E6010
15. Fillet Weld, T-joint, Horizontal Position, Break Test, E6010
16. Fillet Weld, T-joint, Vertical Position, Uphill, with Z-weave Cover, E6010
17. Three-Bead Fillet Weld (Root & 2 Weaves), T-joint Vertical Position, Uphill, E6010
18. Three-Bead Fillet Weld, T-joint, Horizontal Position, E6010
19. Fillet Weld, T-joint, Horizontal Position, Break Test, E6010
20. The Low Hydrogen Electrodes and Their Uses
21. Three-Bead Fillet Weld, T-joint, Vertical Position, Uphill, with Z-weave Cover, E7018
22. Three-Bead Fillet Weld, T-joint, Vertical Position, E7018
23. Power Source Technology
24. Square-Groove Weld, Butt Joint, Horizontal Position
25. Square-Groove Weld, Butt Joint, Horizontal Position, Guided Bend Test
26. Square-Groove Weld, Butt Joint, Vertical Position, Uphill

27. Square-Groove Weld, Butt Joint, Vertical Position, Uphill, Guided Bend Test
28. Square-Groove Weld, Butt Joint, Overhead Position
29. Distortion Control
30. Multi-Pass Fillet Welds, T-joints, Flat, Horizontal, Vertical & Overhead Positions, E7018
31. Multi-Pass Fillet Welds, Lap Joint, Horizontal Position, E7018 & E7024
32. Square-Groove Weld, Butt Joint, Flat Position, Fillet Welds, Lap & T-joints, Horiz. Pos., E7024
33. Fillet Weld, Lap & T-joints, Horizontal & Vertical Position, Down, 11 Gauge, E6013
34. Fillet Weld, Lap & T-joints, Horizontal & Vertical Position, Down, 16 Gauge, E6013
35. Fillet Weld, Lap Joint, Vertical Position, Down, 11 & 16 Gauge, E6013
36. AWS® QC10 2G Qualification Test
37. AWS® QC10 3G Qualification Test
38. AWS® Standard Guided Bend Test

Shielded Metal Arc Welding – Structural
Complete Course: 3 DVDs (1 hr. 58 min); 1 Instructor Guide; 4 written tests, 50 copies each

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Recommended as an advanced plate curriculum for Structural welding and displaying the use of backing strips.

Topics
1. Shielded Metal Arc Welding Structural - Course Overview
2. Introduction to Shielded Metal Arc Welding
3. Safety & Health Of Welders
4. Single V-Groove Weld, Butt Joint, Horizontal (2G) Position
5. Weld Size & Profile
6. Procedure And Welder Qualification
7. Single V-Groove Weld, Butt Joint, Horizontal (2G) Position, Destructive Test
8. Single V-Groove Weld, Butt Joint, Vertical (3G) Position
9. Destructive Testing
10. Single V-Groove Weld, Butt Joint, Overhead (4G) Position
11. Nondestructive Testing
12. Single V-Groove Weld, Butt Joint, Horizontal (2G) Position
13. Air Carbon Arc Cutting & Gouging
14. Single V-Groove Weld, Butt Joint, Horizontal (2G) Position, Destructive Test
15. Single V-Groove Weld, Butt Joint, Vertical (3G) Position
16. Metals Identification for Welding
17. Single V-Groove Weld, Butt Joint, Overhead (4G) Position
18. Welding Cast Iron & Hard Surfacing Welds
19. Single V-Groove Weld, Butt Joint, Flat (1G) Position

To order, use form on page 19, Call 800.332.9448 Ext. 9509 or visit www.welding.org
**Shielded Metal Arc Welding – Pre-pipe**

Complete Course: 3 DVDs (1 hr. 58 min); 1 Instructor Guide; 4 written tests, 50 copies each  
**Item No.** DV05

Recommended as an advanced curriculum to prepare students for SMAW – open root – pipe welding.

**Topics**
1. Shielded Metal Arc Welding Pre-Pipe - Course Overview
2. Introduction to Shielded Metal Arc Welding
3. Safety & Health of Welders
4. Single V-Groove Weld, Butt Joint, Horizontal (2G) Position
5. Weld Size & Profile
6. Procedure & Welder Qualification
7. Single V-Groove Weld, Butt Joint, Horizontal (2G) Position, Destructive Test
8. Single V-Groove Weld, Butt Joint, Vertical (3G) Position
9. Destructive Testing
10. Single V-Groove Weld, Butt Joint, Overhead (4G) Position
11. Nondestructive Testing
12. Single V-Groove Weld, Butt Joint, Vertical Down (3G) Position
13. Air Carbon Arc Cutting & Gouging
15. Single V-Groove Weld, Butt Joint, Vertical (3G) Position, Destructive Test
16. Metals Identification Of Welding
17. Single V-Groove Weld, Butt Joint, Overhead (4G) Position
18. Welding Cast Iron & Hard Surfacing Welds
19. Single V-Groove, Butt Joint, Flat (1G) Position

**Product Item No. List Price**

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**Shielded Metal Arc Welding 6-Inch Pipe Uphill**

Complete Course: 2 DVDs (1 hr. 57 min); 1 Instructor Guide; 5 written tests, 50 copies each  
**Item No.** DV06

**Topics**
1. Shielded Metal Arc Welding 6” Pipe Uphill - Course Overview
2. Introduction to Shielded Metal Arc Welding Pipe
3. Safety & Health of Welders
4. Weld Quality: Reading the Puddle
5. Preparation & Assembly of an Open Root Pipe Joint
7. Standard Destructive Test - Schedule 80 Pipe
8. Methods of Applying the Root Pass
9. Single V-Groove Weld, Butt Joint, (5G) Pipe - Schedule 80
10. How to Read & Apply Welding Procedures
12. Preheat & Interpass Temperatures

**Product Item No. List Price**

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**Shielded Metal Arc Welding Pipe - Downhill**

Complete Course: 2 DVDs (1 hr. 49 min); 1 Instructor Guide; 2 written tests, 50 copies each  
**Item No.** DV05

**Topics**
1. Shielded Metal Arc Welding Pipe Downhill - Course Overview
2. Introduction to Shielded Metal Arc Welding Pipe - Downhill
3. Safety & Health of Welders
4. Weld Quality: Reading the Puddle - Downhill Travel
5. Preparation & Assembly of a 6” Open Root Pipe Joint - Downhill
6. Single V-Groove Weld, Butt Joint, (5G) Position, 6” Pipe - Downhill
7. Standard Visual Inspection - Schedule 80 Pipe - Downhill
8. Pipeline Construction & Welding - Downhill
9. How to Read & Apply Welding Procedures - Downhill
10. Single V-Groove Weld, Butt Joint, (6G) Position, 6” Pipe- Downhill
11. Standard Destructive Test, Guided Bend & Nick Break Test
12. Preparation & Assembly of a 2” Open Root Pipe Joint - Downhill
13. Single V-Groove Weld, Butt Joint, (5G) Position, 2” Pipe - Downhill

**Product Item No. List Price**

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**Gas Metal Arc Welding Basic**

Complete Course: 3 DVDs (2 hrs. 10 min); 1 Instructor Guide; 2 written tests, 50 copies each  

**Gas Metal Arc Welding Advanced**

Complete Course: 2 DVDs (1 hr. 52 min); 1 Instructor Guide; 2 written tests, 50 copies each  

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**Topics**

1. Gas Metal Arc Welding Basic - Course Overview
2. Introduction to Gas Metal Arc Welding
3. Safety & Health of Welders
4. Installation, Setup & Maintenance of Equipment
5. Surfacing Welds, Flat Position
6. Square Groove & Fillet Welds, Butt, Lap & T-Joints, Flat Position
7. Square Groove & Fillet Welds, Butt, Lap & T-Joints, Horizontal Position
8. The Quality of Welds
9. Square Groove & Fillet Welds, Butt, Lap & T-Joints, Vertical Position, Down
10. Square Groove & Fillet Welds, Butt, Lap & T-Joints, Vertical Position, Up
11. Metal Transfer & Shielding Gases
12. Square Groove & Fillet Welds, Butt, Lap & T-Joints, Overhead Position
13. Square V-Groove, Butt Joint, Horizontal Position
14. Square V-Groove, Butt Joint, Horizontal Position, Guided Bend Test
15. Square V-Groove, Butt Joint, Vertical Position, Down
16. Square V-Groove, Butt Joint, Vertical Position, Down, Guided Bend Test
17. Square V-Groove, Butt Joint, Vertical Position, Up
18. Square V-Groove, Butt Joint, Flat Position
19. Square V-Groove, Butt Joint, Overhead Position
20. Fillet Welds, Lap & T-Joints, Horizontal Position
21. Fillet Welds, Lap & T-Joints, Vertical Position, Down
22. Fillet Welds, Lap & T-Joints, Flat Position with Spray Transfer
23. Fillet Welds, Lap & T-Joints, Horizontal Position with Spray Transfer
24. Single V-Groove Weld, Flat Position with Spray Transfer

**Product** | **Item No.** | **List Price**
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Complete GMAWA course | DV10 | $1,125.00
Site License | V11.50 | $500.00

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**Topics**

1. Gas Metal Arc Welding Pipe - Course Overview
2. Introduction to Gas Metal Arc Welding
3. Safety & Health of Welders
4. Equipment Setup, Operation & Shutdown
5. Preparation & Assembly of an Open Root Pipe Joint
6. Single V-Groove Weld, Butt Joint, (2G) Position
7. Weld Quality: Visual Inspection
8. Standard Destructive Test - Schedule 80 Pipe
10. Single V-Groove Weld, Butt Joint, (5G) Position Downhill Root, Upright Fillet & Cover

**Product** | **Item No.** | **List Price**
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Complete GMAWP course | DV15 | $1,125.00
Site License | V015.50 | $500.00

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To order, use form on page 19, Call 800.332.9448 Ext. 9509 or visit www.welding.org
**Flux-Cored Arc Welding**

The Flux Cored Arc Welding training program provides the student with a thorough understanding of the Flux Cored Arc Welding process. It provides training in all positions, on carbon steels, with and without shielding gas, using small and large diameter flux cored electrodes.

**Gas Tungsten Arc Welding**

The Gas Tungsten Arc Welding program is a complete training program. The fundamentals of Gas Tungsten Arc Welding are covered in the basic program. It provides training on mild steel, stainless steel and aluminum, using both direct and alternating current. Gas Tungsten Arc Welding Pipe is divided into two programs. Gas Tungsten Arc Welding 2-inch Pipe prepares the student for pipe welding, and teaches the student to weld on 2-inch Sch. 80 pipe, in all positions. Gas Tungsten Arc Welding 6-inch Pipe provides training on 6-inch pipe using GTAW to deposit the root and second pass; and SMAW to complete the weld. Students also weld on stainless steel pipe and with a consumable insert.

**Flux-Cored Arc Welding**

**Complete Course:** 3 DVDs (2 hrs. 20 min); 1 Instructor Guide; 2 written tests, 50 copies each

**Product** | **Item No.** | **List Price**  
---|---|---  
Complete FCAW course (DVD) | DV12 | $1,125.00  
Site License | V12.50 | $500.00

**Topics**
1. Flux-Cored Arc Welding - Course Overview  
2. Introduction to Flux-Cored Arc Welding  
3. Safety & Health of Welders  
4. Equipment Setup, Adjustment & Maintenance  
5. Single V-Groove Weld, Butt Joint, Horizontal (2G) Position (Gas & Self-Shielded)  
6. Electrode Classification & Selection  
7. Single V-Groove Weld, Butt Joint, Vertical (3G) Position (Gas & Self-Shielded)  
8. Single V-Groove Weld, 2G Destructive Test  
9. Single V-Groove Weld, Butt Joint, Vertical (3G) Position (Gas & Self-Shielded)  
10. Single V-Groove Weld, Butt Joint, Overhead (4G) Position (Gas & Self-Shielded)  
11. Single V-Groove Weld, Butt Joint, Horizontal (2G) Position (Gas & Self-Shielded)  
12. Single V-Groove Weld, Butt Joint, Vertical (3G) Position (Gas & Self-Shielded)  
13. Single V-Groove Weld, 3G Destructive Test  
14. Single V-Groove Weld, Butt Joint, Horizontal (1G) Position (Self-Shielded)  
15. Fillet Weld, Lap Joint, Flat (1F) Position (Metal-Cored)  
16. Single V-Groove Weld, Butt Joint, Flat (1G) Position (Metal-Cored)  
17. Single V-Groove Weld, Butt Joint, Horizontal (2G) Position (Gas & Self-Shielded)  
18. Single V-Groove Weld, Butt Joint, Horizontal Fixed Position (5G), Pipe

**Gas Tungsten Arc Welding**

**Complete Course:** 4 DVDs (3 hrs. 40 min); 1 Instructor Guide; 4 written tests, 50 copies each

**Topics**
1. Gas Tungsten Arc Welding - Course Overview  
2. Introduction to Gas Tungsten Arc Welding  
3. Safety & Health of Welders  
4. Equipment Setup, Adjustment & Shutdown  
5. Stringer Bead, Flat Position (Carbon Steel)  
6. The Essentials of GTAW  
7. Fillet Weld, Lap Joint, Horizontal & Flat Positions (Carbon Steel)  
8. The metallurgy & Weldability of Carbon Steel  
9. Fillet Weld, Outside Corner Joint, Flat Position (Carbon Steel)  
10. Fillet Weld, T-Joint, Horizontal, Vertical Up & Flat Positions (Carbon Steel)  
11. Fillet Weld, T-Joint, Overhead Position (Carbon Steel)  
12. Square-Groove Weld, Butt Joint, Flat Position (Carbon Steel)  
13. Square-Groove Weld, 1G Destructive Test (Carbon Steel)  
14. Square-Groove Weld, Butt Joint, Horizontal & Vertical Up Positions (Carbon Steel)  
15. Square-Groove Weld, Butt Joint, Overhead Position (Carbon Steel)  
16. Introduction to GTA Using Pulsed Current  
17. Square-Groove Weld, Butt Joint, Flat Position (Stainless Steel)  
18. The Welding Characteristics of Stainless Steel  
19. Square-Groove Weld, Butt Joint, Horizontal Position (Carbon Steel)  
20. Fillet Weld, Lap Joint, Horizontal & Flat Positions (Stainless Steel)  
21. Fillet Weld, Outside Corner Joint Flat Position (Stainless Steel)  
22. Fillet Weld, T-Joint, Horizontal, Vertical Up & Flat Positions (Stainless Steel)  
23. Visual Inspection Test, Stainless Steel  
24. The Welding Characteristics of Aluminum  
25. Stringer Bead, Flat Position (Aluminum)  
26. The Effects of Processes Variables on the Welding Arc  
27. Fillet Weld, Outside Corner Joint, Flat Position (Aluminum)  
28. Fillet Weld, Outside Corner Joint, Vertical Position, Up (Aluminum)
### Oxyacetylene Welding, Cutting & Brazing

**The Oxyacetylene Welding, Cutting and Brazing program is a complete training program. It teaches the student to flame cut plate, braze mild steel, cast iron and copper. There is related information on weld quality and applications of fuel gases, not used in this course.**

**Recommended as an entry-level curriculum to teach cutting techniques & hand-eye coordination associated with good puddle control & filler addition.**

**Topics**

1. Oxyacetylene Welding, Brazing & Cutting - Course Overview
2. Introduction to Oxyacetylene Welding, Brazing & Cutting
3. Oxyacetylene Welding Safety
4. Safety & Health of Welders
5. Equipment Setup, Operation & Shutdown
6. Welding Quality: Controlling the Welding Variables
7. Stringer Bead, Bead on Plate - With & without Filler Metal, Flat Position
8. Fillet Weld, Lap Joint, Horizontal (2F) Position
9. Fillet Weld, Inside Corner joint, Horizontal (2F) Position
10. Fillet Weld, Lap Joint, Vertical (3F) Position
11. Fillet Weld, Inside Corner joint, Vertical (3F) Position
12. Square Groove Weld, Butt Joint, Vertical (3G) Position
13. Introduction to Oxyacetylene Flame Cutting
14. Standard Destructive Test, Visual Inspection & Guided Bend Test
15. Square Groove Weld, Butt Joint, Flat (1G) Position
16. Square Groove Weld, Butt Joint, Overhead (4G) Position
17. Square Groove Weld, Butt Joint, Horizontal (2G) Position
18. Application of Fuel Gases
20. Square-Groove, Bevel & Hole Cuts - Visual Inspection
21. Single V-Groove Weld, Butt Joint, Vertical (3G) Position
22. Single V-Groove Weld, Butt Joint, Flat (1G) Position
23. Single V-Groove Weld, Butt Joint, Overhead (4G) Position
24. Single V-Groove Weld, Butt Joint, Horizontal (2G) Position
25. Single V-Groove Weld, Butt Joint, (5G) Position, 2" Pipe
27. Introduction to Soldering, Brazing & Braze Welding
28. Fillet Weld, Lap Joint, Square-Groove, Butt Joint, Braze Weld, Horizontal (2F) & Flat (1G) Position
29. Socket Joint, Brazed Copper (2F) Position
30. Socket Joint, Brazed Copper (5F) Position
### COMPLETE TRAINING COURSES

#### Welding Procedures & Qualification

**Complete Course:** 1 DVD (26 min); 1 Instructor Guide; 1 written test, 50 copies  
**Item No.:** DV86.3  
**List Price:** $500.00

**Topics**
1. Purpose of Welding Procedures & Qualification
2. Welding Procedure Specifications
3. Procedure Qualification Records
4. Performance Qualification
5. Maintaining Qualification Records

#### Welding Discontinuities & Defects

**Complete Course:** 1 DVD (1 hr, 12 min); 1 Instructor Guide; 1 written test, 50 copies  
**Item No.:** DV86.4  
**List Price:** $500.00

**Topics**
1. Weld Inspector Responsibilities Related to Discontinuities & Defects
2. Identification & Definition of Weld Discontinuities & Defects
3. Common Causes of Discontinuities related to Shape, Size & Contour
4. Common Causes of Discontinuities related to Internal Inconsistencies & Weld Metal Irregularities
5. Common Causes of Discontinuities related to Weld & Base Metal Properties

### Destructive Testing Methods

**Complete Course:** 1 DVD (43 min); 1 Instructor Guide; 1 written test, 50 copies  
**Item No.:** DV86.5  
**List Price:** $500.00

**Topics**
1. Introduction to Destructive Testing
2. Tensile Tests
3. Impact Tests
4. Guided Bend Tests
5. Nick Break Tests
6. Fillet Weld Break Tests
7. Etch Tests

### Nondestructive Testing Methods

**Complete Course:** 1 DVD (45 min); 1 Instructor Guide; 1 written test, 50 copies  
**Item No.:** DV86.6  
**List Price:** $500.00

**Topics**
1. Introduction to Nondestructive Testing
2. Principles of Visual Inspection
3. Principles of Liquid Penetrant Testing
4. Principles of Magnetic Particle Testing
5. Principles of Ultrasonic Testing
6. Principles of Radiographic Testing

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**Student Workbooks are listed on Pages 12-13**

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To order, use form on page 19, Call 800.332.9448 Ext. 9509 or visit www.welding.org
**Common Arc Welding Processes**

**Complete Course: 2 DVDs (2 hrs, 10 min); 1 Instructor Guide; 2 written tests, 50 copies each**

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**Topics**
1. Introduction to Common Arc Welding Processes
2. Safety and Health of Welders
3. Introduction to Shielded Metal Arc Welding
4. SMAW Electrode Selection
5. Introduction to Gas Metal Arc Welding
6. GMAW Metal Transfer and Shielding Gases
7. Introduction to Flux Cored Arc Welding
8. FCAW Electrode Classification and Selection
9. Introduction to Gas Tungsten Arc Welding
10. The Essentials of GTAW

**Symbols For Welding, Blueprint Reading, Advanced Blueprint & Pipe Layout**

These courses are designed to be used with Programmed Learning Courses on page 14.

**Arc Welding Safety**

**1 DVD (11 min)**

**Complete Course: 1 DVD (58 min)**

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Covers the following areas of arc welding safety:

- Arc Radiation
- Air Contamination
- Compressed Gases
- Cleaning
- Electric Shock
- Fire and Explosion
- Other welding hazards
- Safety Data Sheets
- Safety Standards

**Basic Metallurgy**

**1 DVD (40 min)**

Included in complete GTAW course (DV20.0)

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**Topics**

- The metallurgy & weldability of carbon steel
- The welding characteristics of stainless steel
- The welding characteristics of aluminum
### Blueprint Reading for Welders & Fitters

**Complete Course:** 2 DVDs (1 hr. 22 min)  
1 Instructor Guide  

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**Topics**
1. Introduction to blueprint reading for welders and fitters  
2. Review of mathematics  
3. Metrics and metric conversions  
4. Review of welding symbols  
5. Orthographic views  
6. Standard drawing lines and symbols  
7. Interpreting blueprint information  
8. Surface and centerline relationships  
9. Auxiliary views  
10. Scale drawings  
11. Dimensional tolerance and stock allowance  
12. Set-up tools  
13. Set-up applications

**Site License**
- V81.50 $500.00

**Complete Blueprint Reading Course**
- Item No. DV81 $500.00

Test are included with each student packet on page 14, not Complete Training Courses.

### Pipe Layout for Pipefitters & Welders

**Complete Course:** 2 DVDs (1 hr. 50 min)  
1 Instructor Guide  

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**Topics**
1. Introduction to Pipe Layout for Pipefitters and Welders  
2. Review of Basic Shapes & Pipefitter Terminology  
3. Review of Basic Mathematic Calculations  
4. Review of Decimals  
5. Review of Geometric Calculations  
6. Angles & Angular Layout  
7. Calculated Welded Offsets  
8. Offsets Other than 45° & 90°  
9. Welded Offsets  
10. Multiple Turn Layouts  
11. Two Piece Parallel Offsets  
12. Offsets Around Obstructions  
13. Rolling Offsets  
14. Fabricated Tees  
15. Lateral Tees  
16. Circumferential Sleeves  
17. Pipe Blanking  
18. Elliptical Holes & Blind Flanges  
19. Fabricating Brackets

**Site License**
- V82.50 $500.00

**Complete Course**
- Item No. DV82 $1,195.00

**Site License – Pipe Layout for Pipefitters & Welders**
- V82.50 $500.00

### Advanced Blueprint Reading

**Complete Course:** 1 DVD (46 min)  
1 Instructor Guide  

**SITE LICENSE (SL)**
In response to request to place DVD’s on company and school intranets (private networks) a site license (SL) at an additional cost of $500.00 per program is now available for each Complete Training Course purchased from Hobart Institute of Welding Technology (HIWT). Complete Training Courses may contain multiple DVD’s. A separate site license is required for each program you intend to distribute.

The site license, granted for a three year period, included a signed document authorizing the electronic distribution of HIWT training materials to others within your organization’s secure network. The intranet distribution of Hobart Institute DVD’s without a site license is prohibited.
Student Workbooks

Workbooks follow the DVDs topic-by-topic and take a step-by-step approach to practice sessions, featuring objectives; set-up instructions; materials and machine settings; and summaries of essential theory with lots of illustrations. All destructive tests are based on AWS®, ASME or API codes.

Oxyacetylene Welding
Consists of 30 topics which include 19 skill topics, 2 testing topics and 7 topics that cover essential theory. There is also course overview and introduction. 172 pages
Item No. EW369OAW .........................List Price $24.00

Shielded Metal Arc Welding Basic
Consists of 38 topics which include 29 skill topics with 8 of these topics covering essential theory and course overview, 4 testing topics and introduction. 188 pages
Item No. EW369SMAWB ......................List Price $24.00

Shielded Metal Arc Welding Structural
Consists of 19 topics which include 9 skill, 9 essential theory topics and course overview. 104 pages
Item No. EW369SMAWA1 ......................List Price $24.00

Shielded Metal Arc Welding Pre-Pipe
Consists of 19 topics which include 9 skill, 9 essential theory topics and course overview. 100 pages
Item No. EW369SMAWA2 ......................List Price $24.00

Shielded Metal Arc Welding 2 inch Pipe Uphill
Consists of 15 topics which include 10 skill topics, 4 essential theory and course overview. 100 pages
Item No. EW369SMAWPU2 .....................List Price $24.00

Shielded Metal Arc Welding 6 inch Pipe Uphill
Consists of 13 topics which include 6 skill topics, 5 essential theory and an introduction and course overview. 96 pages
Item No. EW369SMAWPU6 .....................List Price $24.00

Shielded Metal Arc Welding Pipe Downhill
Consists of 14 topics which include 6 skill topics, 2 testing, 4 essential theory and an introduction and course overview. 92 pages
Item No. EW369SMAWPD .....................List Price $24.00

Gas Metal Arc Welding Basic
Consists of 24 topics which include 19 skill and 5 essential theory topics. 96 pages
Item No. EW369GMAWB .....................List Price $24.00
**Gas Metal Arc Welding Advanced**  
Consists of 15 topics which include 9 skill, 4 essential theory, an introduction and overview.  77 pages  
Item No. EW369GMAWA.................................List Price $25.00

**Gas Tungsten Titanium**  
Consists of 17 topics which include 8 skill, 4 test and course overview.  52 pages  
Item No. EW369GTAWT.................................List Price $25.00

**Gas Metal Arc Welding Pipe**  
Consists of 13 topics which include 6 skill, 5 essential theory, an introduction and overview.  76 pages  
Item No. EW369GMAWP.........................List Price $25.00

**Welding Procedures & Qualification**  
An explanation of the steps necessary to develop procedure and performance qualifications.  38 pages  
Item No. EW512-3.................................List Price $25.00

**Flux Cored Arc Welding**  
Consists of 18 topics which include 13 skill, 4 essential theory, an introduction and overview.  94 pages  
Item No. EW369FCAW.................................List Price $25.00

**Welding Discontinuities & Defects**  
An explanation of the welding discontinuities and defects in relation to welding procedure variables.  38 pages  
Item No. EW512-4.................................List Price $25.00

**Gas Tungsten Arc Welding**  
Consists of 33 topics which include 23 skill, 9 essential theory and a course overview.  116 pages  
Item No. EW369GTAW .................................List Price $25.00

**Destructive Testing**  
An explanation of destructive testing and results obtained.  44 pages  
Item No. EW512-5.................................List Price $25.00

**Gas Tungsten Arc Welding 2 Inch Pipe**  
Consists of 10 topics which include 5 skill, 4 essential theory and course overview.  52 pages  
Item No. EW369GTAWP2.................................List Price $25.00

**Nondestructive Testing**  
An explanation of nondestructive testing and results obtains.  34 pages  
Item No. EW512-6.................................List Price $25.00

**Gas Tungsten Arc Welding 6 Inch Pipe**  
Consists of 15 topics which include 9 skill, 5 essential theory and course overview.  96 pages  
Item No. EW369GTAWP6.................................List Price $25.00

**Gas Tungsten Arc Welding Advanced**  
Consists of 15 topics which include 9 skill, 4 essential theory, an introduction and overview.  77 pages  
Item No. EW369GMAWA.................................List Price $25.00

**Gas Tungsten Titanium**  
Consists of 17 topics which include 8 skill, 4 test and course overview.  52 pages  
Item No. EW369GTAWT.................................List Price $25.00

**Gas Metal Arc Welding Pipe**  
Consists of 13 topics which include 6 skill, 5 essential theory, an introduction and overview.  76 pages  
Item No. EW369GMAWP.........................List Price $25.00

**Welding Procedures & Qualification**  
An explanation of the steps necessary to develop procedure and performance qualifications.  38 pages  
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Item No. EW369GTAWP2.................................List Price $25.00

**Nondestructive Testing**  
An explanation of nondestructive testing and results obtains.  34 pages  
Item No. EW512-6.................................List Price $25.00

**Gas Tungsten Arc Welding 6 Inch Pipe**  
Consists of 15 topics which include 9 skill, 5 essential theory and course overview.  96 pages  
Item No. EW369GTAWP6.................................List Price $25.00

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Programmed Learning Courses

These courses provide a simple yet complete method for students to learn and understand the principles of welding symbols, symbols for nondestructive examination, blueprint reading and pipe layout. Each page is designed to teach a small amount of information which is reinforced through an action/problem and self-check (see illustration at right). Each page builds for the next as the student learns in an efficient and rewarding manner.

Symbols for Welding

The symbols for welding course is based on AWS® A2.4 Symbols for Welding and Nondestructive Examination Standard. This system of communication provides the vital link between the designer and people responsible for producing and planning welding. 3 Tests are included with each student packet. 122 pages.

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Symbols for Nondestructive Examination

This course is designed to teach students how to interpret nondestructive examination symbols based on AWS® 2.4. For the benefit of students not familiar with welding symbols, the first part of the course serves as an introduction. 1 Test is included with each student packet. 38 pages.

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<td>Key to test</td>
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Blueprint Reading for Welders & Fitters

The blueprint reading for welders and fitters course contains valuable information on mathematics and metrics, Blueprint reading for the welder, blueprint reading for the fitter, setup tools, and set-up applications. 5 Tests are included with each student packet. 176 pages.

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Advanced Blueprint Reading

This two packet course covers the design procedure; interpretation of blueprints and shop drawings as well as applying this information; the use of measuring tools in layout and assembly; having a basic understanding of codes, specifications and standards and to be aware of the responsibility of a welder in quality control. 11 tests included with the packets, 185 pages.

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<td>Key to tests</td>
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Pipe Layout for Pipefitters & Welders

This 10 section, self-study, programmed learning course includes: Pipefitter terminology, mathematics & plane figures, angles and angular layout, calculated welded offsets, tees, laterals & circumferential sleeves, pipe blanking, elliptical holes, brackets and pipe flanges. Based in part on Thomas W. Frankland’s "The Pipe Fitters and Pipe Welder’s Handbook," and "Pipe Trades Pocket Manual." 10 Tests are included with each student packet, 237 pages.

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**Technical Guides**

These guides contain extensive welding information on individual welding processes and welding subjects. They supplement the student workbooks for welding training and have application for manufacturing engineering and quality control. Books are in full color.

**Welding Guide** — Provides general welding information including common arc welding process descriptions, weldability of metals, non-destructive testing process descriptions, welding data charts and tables, and metric conversion. 117 pages.
Item No. EW-385 .................................................................List Price $29.00

**Gas Tungsten Arc Welding** — Covers the process in detail, equipment, applications, procedures, welding training and safety. 98 pages.
Item No. EW-470 .................................................................List Price $29.00

**Shielded Metal Arc Welding** — Describes the SMAW process, procedures and applications, electrode selection charts, welding safety and explains equipment used. 78 pages.
Item No. EW-472 .................................................................List Price $29.00

**Gas Metal Arc Welding** — The GMAW process, equipment, applications, procedures, safety and welding symbols are all explained in detail. 110 pages.
Item No. EW-473 .................................................................List Price $29.00

**Flux-Cored Arc Welding** — This guide describes the self-shielded and gas shielded processes, equipment, methods of application, safety and procedures. 98 pages.
Item No. EW-492 .................................................................List Price $29.00

**Safety and Health of Welders** — A valuable guide to protection against the hazards associated with welding. 23 pages.
Item No. EW-607 .................................................................List Price $20.00

**Oxyfuel Welding, Cutting & Brazing** — This guide covers the process, equipment, and safety. 82 pages.
Item No. EW-480 .................................................................List Price $29.00

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General Welding Books

Pocket Welding Guide, 32nd Edition — Known as the “Welder’s Bible”, and widely used by students, teachers, hobbyists and professionals as a handy reference, this updated edition features: overview of all welding processes, examples of good and bad weld beads, causes & cures of common welding problems, welding symbols, guidelines for the indentification of metals & calculating filler metal consumption, oven storage & reconditioning of filler metals, shielding gases & their uses, AWS® filler metal classifications & comparative indices, GMAW welding parameter, complete listing of filler metals with operating ranges, filler metals selector guide for welding ASTM steels, troubleshooting guides for semiautomatic wire & equipment, welding terms & definitions, metric conversions tables, and more. 164 pages. 4” x 7” format.
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WELDING: A Journey to Explore its Past by Andre A. Odermatt — What is this simple but complex process called welding? When did it begin? This book is a humble attempt to answer just a few questions about the origins of welding. It is not a textbook or an academic paper. It aims to give the reader some basic knowledge of a few aspects of the history of welding and its problems and its contribution to society, from antiquity to modern times, from brazing and forging to gas welding and electric welding.
Item No. EW-806 1st Edition 181 Pages..............................List Price $17.95
Item No. EW-807 2nd Edition 213 Pages............................List Price $29.95

Properties and Uses of Ferrous and Non-ferrous Metals by Weiss & Leuchtmann. 112 pages.
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Item No. EW-676 ..............................................................List Price $26.95

Pipe Welding & Pipe Layout Books

Pipefitters Handbook — A comprehensive reference including tables for pipe bends, offsets, mitered joints and other useful information for shop and field use. Leatherette bound, 444 pages.
Item No. EW-389 ..............................................................List Price $32.00

Pipe Trades Pocket Manual by Frankland — Tables for bending, offsets, miter turn fittings, elbow offsets, solving angles with steel square and more. Leatherette bound. 262 pages.
Item No. EW-390 ..............................................................List Price $26.95

The Pipe Fitters and Pipe Welders Handbook by Frankland — Pocket size booklet containing layout information for making all types of pipe joints. Leatherette bound. 194 pages.
Item No. EW-234 ..............................................................List Price $26.95

Pipe Trades Handbook — Covers basic data on tube and pipe, national standards, fittings, valves, joints, offsets, pipe layout, mathematics and pipe welding. 534 pages.
Item No. EW-696 ..............................................................List Price $26.95

PipeFitters Bluebook — Contains charts, tables, drawings, instructions on pipe joints and layout. 176 pages.
Item No. EW-697 ..............................................................List Price $25.00

Pipe Layout for Pipefitters and Welders — This 10 section, self-study, programmed learning course from the Hobart Institute of Welding Technology includes pipefitter terminology, mathematics & plane figures, angles and angular layout, calculated welded offsets, tees, laterals & circumferential sleeves, pipe blanking, elliptical holes, brackets and pipe flanges. 10 tests are included with each copy. 237 pages.
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Answer Key
Item No. EW-519 ..............................................................List Price $12.95
AWS® Books

Certification Manual for Welding Inspectors — A great study aid for the AWS® CWI®/CWE® exam. Reduce those day-of-test jitters by putting yourself in command of the material that everyone must know to succeed on the CWI® exam. Over 360 questions and answers. 300 pages
Item No. EW-475 ..... List Price $200.00

Welding Inspection — Essential information for the CWI® on manual arc welding inspection techniques including destructive testing and nondestructive examination methods. 275 pages.
Item No. EW-223 ........................................................., List Price $92.00

Welding Terms and Definitions — The comprehensive and official listing of welding and cutting terms and definitions. (A3.0M/ A3.0:2020) 148 pages.
Item No. EW-291 ........................................................., List Price $200.00

Welding Codes & Specifications

API Standard 1104, Standard for Welding Pipelines and Related Facilities 22nd Edition — This code book published by the American Petroleum Institute provides the complete and detailed information needed by welders, inspectors and engineers. 162 pages.
Item No. EW-264 .................................................................., List Price $410.00

AWS® Structural Welding Code, D1.1 — Complete structural welding code for buildings, bridges, and other welded structures. Welding engineers, inspectors and others involved with design and quality control of welded structures should have this book for guidance and reference. 634 pages.
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Welding Inspection Tools

V-WAC Gauge
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Fillet Weld Gauge
A valuable tool for measuring both convex and concave fillet weld dimensions.
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Gas Metal Arc Welding (GMAW) (MIG) ......................... EW-904 $10.00
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Typical Weld joint Symbols ............................................. EW-907 $10.00
Electrode Selection and Identification .................. EW-908 $10.00
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• Common Terms Applied to a Weld
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• Diagram of Shielded Metal Arc Welding
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• Electrode Angle
• Tungsten Electrode Preparation
• 5 Essential
• 5 Methods of Control
• Travel Speed
• The Fire Tetrahedron
• Fire Extinguisher Ratings

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Individual Posters
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Item No. EW919

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- American Express
- Discover
- Visa
- Mastercard

Card No. ___________________________ Security Code ___________________________
Expiration date __________________

Subtotal: ________________________
Shipping: _______________________
Total Amount: ____________________

See Reverse Side for TERMS & SHIPPING CHARGES
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**Discounts:** A 20% educational discount applies to all schools.

**Prices:** All prices are in U.S. dollars. Prices subject to change without notice.
ONLINE EDUCATION

OL-001  Symbols For Welding Online Course
.4 CEU  $89.00  SELF-PACED

This online version of Symbols for Welding course is based on the AWS® A2.4 Symbols for Welding and Nondestructive Examination Standard. This system of communication provides the vital link between the designer and the people responsible for producing and planning welding.

Within the online course you will have the opportunity to download the EW-342 Symbols for Welding Learning Packet and work on specific problems; view the Symbols for Welding videos which are broken down into topic sections; take each of the 3 required test. Each test may be taken two times.

Your password is good for a period of one year with unlimited log-ins during that time. Completion time for the course varies with each individual. Take into consideration the time to watch the videos plus the time to work through the learning packet plus the time to take the test. You may start and stop at any point.

Upon purchase of the course, you will receive an email of your online receipt of purchase and a separate email with account access instructions and link to online course.

You may add the optional paper version of the Symbols for Welding Programmed Learning Packet (EW342) containing 113 pages, which will be mailed to you. Three tests are included with each student packet.

OL-002  Visual Inspection Welding Online Course
.4 CEU  $89.00  SELF-PACED

This course concentrates on the single most used method of welding inspection — what we can see with the naked eye. Anyone involved with arc welding inspection, quality control, engineering or supervision should know the fundamentals of what to observe, prior to, during and after welding.

Contains 5 video segments totaling a run time of 60 minutes.

During this course you will learn about common weld gauges, temperature indicators, marking repair welds, visual inspection prior to, during, and after welding, terminology of weld defects, general requirements for equipment and workmanship standards, and a visual inspection checklist.

At your own pace from your computer you will view videos and will be able to take (and retake) online competency exams.

OL-003  Welding Discontinuities & Defects Online Course
.4 CEU  $89.00  SELF-PACED

The course concentrates on defects and discontinuities related to welding and is intended to assist anyone involved in arc welding inspection, quality control, engineering or supervision. The objective is to be able to identify and determine the common causes of weld discontinuities and defects.

Contains 5 video segments totaling a run time of 70 minutes. Quizzes are provided to measure progress along the way with a final test to obtain a certificate of completion.

*IMPORTANT*

HIWT reviews each order for accuracy and to protect you and HIWT from fraud. After authorization and capture of your payment by HIWT personnel, you will be sent an email (typically within 1 business day) with access instructions for your course. Make sure to watch your incoming mail and spam folder. When you score 76% or higher, a Certificate of Completion will be issued for you to print that will contain the continuing education units earned for the online course. In addition, please add “welding.org” to your trusted/safe sender’s list.
OL-004  Destructive Testing Methods Online Course  
.4 CEU  $89.00  SELF-PACED

This course concentrates on the various destructive testing methods used to evaluate welds including tensile and impact tests, guided bend tests, nick break tests, fillet weld break tests, and etch tests. It is intended for those involved in welding inspection, quality control, engineering or supervision. The objective is to be able to perform tests and determine the weld defects.

Contains 7 video segments totaling a run time of 43 minutes. Quizzes are provided to measure progress along the way with a final test to obtain a certificate of completion.

OL-005  Nondestructive Testing Methods Online Course  
.4 CEU  $89.00  SELF-PACED

This course concentrates on the various nondestructive testing methods used to evaluate welds including visual inspection, liquid penetrant testing, magnetic particle testing, ultrasonic testing, and radiographic testing. It is intended for those involved in welding inspection, quality control, engineering or supervision. The objective is to be able to evaluate welds and determine the weld defects.

Contains 6 video segments totaling a run time of 45 minutes. Quizzes are provided to measure progress along the way with a final test to obtain a certificate of completion.

OL-006  Welding Characteristics Of Steel, Stainless Steel, & Other Metals  
.4 CEU  $89.00  SELF-PACED

This course will provide the non-metallurgist with basic knowledge of various metals and their weldability. Anyone involved with welding will benefit from the better understanding of welding the different metals. Students will learn the basic principles of metal properties, heat input, preheating, postheating, selecting filler metals plus many more topics including: Welding carbon and low alloy steels

- Welding stainless steels
- Welding tool and die steels
- Welding aluminum alloys
- Welding magnesium alloys
- Welding cast iron
- Hard surfacing
- Metals identification for welding

The course consists of 4 main topics:
1. The Metallurgy & Weldability of Carbon Steel
2. The Welding Characteristics of Stainless Steel and Tool Steels
3. The Welding Characteristics of Aluminum and Magnesium
4. Welding Cast Iron and Hard Surfacing Welds

Each topic contains slide segments, video segments and quizzes. The total running time for the video segments is approximately 60 minutes. Once you have completed the 4 topic quizzes and achieved at least a 76% you will then be able to generate a Course Completion Certificate.

OL-007  Welding Procedures & Qualification  
.4 CEU  $89.00  SELF-PACED

This course concentrates on the steps typically followed when developing and qualifying Welding Procedure Specifications (WPS). Additionally, Welder and Welding Operator Performance Qualification will be discussed.

Contains 1 main topic covering Welding Codes, Procedures, and Welder Qualification plus 5 video segments totaling a run time of 25 minutes. Quizzes are provided to measure progress along the way with a final test to obtain a certificate of completion.

At your own pace from your computer you will view videos and will be able to take (and retake) online competency exams.
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<th>Item Description</th>
<th>Code</th>
<th>Logo Details</th>
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<td>P155</td>
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<td>Two-Tone Garment Dyed Cap</td>
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<td>In pebble/black. One size fits all.</td>
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<td>$14.95</td>
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To order, use form on page 19, Call 800.332.9448 Ext. 9509 or visit www.welding.org
Please visit our website www.welding.org for a complete list.

Mesh Back Hat - PI63
Royal Blue.
One size fits all.
$14.95

Mesh Back Hat - PI64
Gray.
One size fits all.
$14.95

Oval Acrylic Key Chain - PI15
W/ full color imprint encased within crystal-clear, virtually indestructible acrylic key tag.
2-1/8" x 1-3/8"
$2.25

“The Traveler” Travel Mug - PI26
Black w/ gold logo. Fits most built-in drink holders. High gloss finish.
Spill proof lid. 16 oz.
$6.95

Waffle Beanie - PI38
Black ribbed edge in chrome w/ embroidered 3-color logo
$10.95

Belt Buckle - PI09
Solid brass
W/ raised logo
$8.00

Welding Process Calculator Set - EW700
Set of three calculators (one each for SMAW, GMAW and GTAW)
$4.95

Coffee Mug - PI21
White silk screened 3-color logo on both sides. 8 oz.
$6.95

Logo Patch - PI11
Embroidered 3-color logo.
4" x 2-3/4"
$4.00

BSX® Extreme Welders Gearpack - sgear
Designed inside and out specifically for welders. The BSX® Gearpack includes lots of storage room and accessory/tool pockets.
$95.00

HIWT Offers a variety of Logo Branded items.
HIWT COURSES

Would you like to learn a specific process or refresh your welding skills?

HIWT offers Individual Courses

Hobart Institute of Welding Technology offers individual courses in major arc welding processes. A list of courses is below. Please visit our website www.welding.org for course descriptions, pricing and dates offered.

<table>
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<tr>
<th>Course Number</th>
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<td>WTB101</td>
<td>Welding Technology &amp; Blueprint Reading</td>
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<td>WTB201</td>
<td>Advanced Blueprint Reading</td>
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<td>OAW101</td>
<td>Oxyacetylene Welding, Cutting, &amp; Brazing</td>
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<td>Pipe Layout for Pipefitters &amp; Welders</td>
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<td>PLF201</td>
<td>Pipe Layout for Pipefitters &amp; Welders II</td>
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<tr>
<td>FAB101</td>
<td>Introduction to Metal Fabrication</td>
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Technical Training Courses

HIWT’s Technical Training Courses are designed for welding professionals of all levels seeking to take their education to the next level. These courses offer CEU’s toward the hours needed to maintain certifications, as well as expand knowledge on welding processes, visual inspection of welds and nondestructive testing of welds.

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<th>Course number</th>
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<td>MET101</td>
<td>Fundamentals of Metallurgy</td>
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<td>NW515</td>
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<td>AWI520</td>
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<td>LP800</td>
<td>Liquid Penetrant &amp; Magnetic Particle Inspection</td>
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<td>CWS550</td>
<td>Preparation for AWS® CWS Examination Course</td>
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<td>CWI540</td>
<td>Preparation for AWS® CWI® Certified Welding Inspector Examination Course</td>
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<td>RCW545</td>
<td>Preparation for Recertification of CWI® Course</td>
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<tr>
<td>CWI540-C</td>
<td>Preparation for AWS® CWI® Code Endorsement</td>
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