WELDING TRAINING MATERIALS CATALOG 2020
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Schools Receive a 20% Educational Discount
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>
</tr>
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<tbody>
<tr>
<td>3. 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 E6010 and E7010 compliance).</td>
<td>Introduce this topic by paraphrasing the following: Every year, hundreds of people’s lives are changed forever because they, or someone they work with fails to follow proper safety procedures. Think about it. One day the pressure is on to get a job done. You’ve done the job so many times before, and it seems so routine that you decide to take a few short cuts. The next thing you know you’re lying in a hospital bed with third degree burns, or perhaps you’ve lost the use of your legs and will never walk again. So protect yourself and those around you by following safe work procedures. This next topic deals with the things you need to do to protect yourself.</td>
</tr>
</tbody>
</table>

- **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.

- **Answer Keys for Written Test**
  Answer keys for each written test makes 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.

- **DVDs**

**COMPLETE TRAINING COURSE OVERVIEW**

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

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**Shielded Metal Arc Welding Basic** Updated 2019

<table>
<thead>
<tr>
<th>Complete Course: 4 DVDs (3 hrs. 47 min); 1 Instructor Guide; 5 written tests, 50 copies each</th>
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<tr>
<td><strong>ITEM NO.</strong> DV01</td>
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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 Welder’s 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-arc Cover, E6010
17. Three-Bead Fillet Weld (Root & 2 Weaves), T-joint Vertical Position, Uphill, E6010
18. Three-Bead Fillet Weld, T-joint, Overhead Position, E6010
19. Fillet Weld, T-joint, Overhead Position, Break Test, E6010
20. The Low Hydrogen Electrodes and Their Uses
21. Three-Bead Fillet Weld, T-joint, Vertical Position, Uphill, with Z-arc Cover, E7018
22. Three-Bead Fillet Weld, T-joint, Overhead 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 & 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

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**Shielded Metal Arc Welding – Structural (Advanced 1)**

<table>
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<tr>
<th>Complete Course: 3 DVDs (1 hr. 58 min); 1 Instructor Guide; 4 written tests, 50 copies each</th>
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<tr>
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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

**Product**

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<td>Complete SMAWA-1 course .......................... DV02</td>
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<td>$40.00</td>
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*Includes 1 student workbook, 1 technical guide & answer keys for tests

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**Site License**

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*Includes 1 student workbook, 1 technical guide & answer keys for tests

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*Includes 1 student workbook, 1 technical guide & answer keys for tests

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*Includes 1 student workbook, 1 technical guide & answer keys for tests

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*Includes 1 student workbook, 1 technical guide & answer keys for tests

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To order, use form on page 19, Call 800.332.9448 Ext. 9509 or visit www.welding.org
### Shielded Metal Arc Welding – Pre-pipe (Advanced 2)

**Product** | **Item No.** | **List Price**  
--- | --- | ---  
Complete SMAW course | DV01 | $995.00  
5 written tests, 50 copies ea. | V01.41 | $35.00  
Instructor guide* | V01.40 | $59.00  
Site License | V01.50 | $50.00  

*Includes 1 student workbook, 1 technical guide & answer keys for tests

**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
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

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

**Product** | **Item No.** | **List Price**  
--- | --- | ---  
Complete SMAW course | DV05 | $995.00  
4 written tests, 50 copies ea. | V05.41 | $35.00  
Instructor guide* | V05.40 | $59.00  
Site License | V05.50 | $500.00  

*Includes 1 student workbook, 1 technical guide & answer keys for tests

### Shielded Metal Arc Welding 2-Inch Pipe Uphill

**Product** | **Item No.** | **List Price**  
--- | --- | ---  
Complete SMAW course | DV03 | $995.00  
2 written tests, 50 copies ea. | V03.41 | $35.00  
Instructor guide* | V03.40 | $59.00  
Site License | V03.50 | $500.00  

*Includes 1 student workbook, 1 technical guide & answer keys for tests

**Topics**
1. Shielded Metal Arc Welding 2" 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 - Double Extra Strong (XX Strong)
7. Standard Destructive Test - Double Extra Strong Pipe (XX Strong)
8. Single V-Groove Weld, Butt Joint, (5G) Pipe - Double Extra Strong (XX Strong)
10. Preparation & Assembly of an Open Root Pipe - Schedule 80
11. Single V-Groove weld, Butt Joint, (2G) Pipe - Schedule 80
12. Standard Destructive Test Schedule 80 Pipe
13. Single V-Groove Weld, Butt Joint, (5G) Pipe - Schedule 80

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

**Product** | **Item No.** | **List Price**  
--- | --- | ---  
Complete SMAW course | DV06 | $995.00  
5 written tests, 50 copies ea. | V06.41 | $40.00  
Instructor guide* | V06.40 | $59.00  
Site License | V06.50 | $500.00  

*Includes 1 student workbook, 1 technical guide & answer keys for tests

**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

### Shielded Metal Arc Welding Pipe - Downhill

**Product** | **Item No.** | **List Price**  
--- | --- | ---  
Complete SMAWPD | DV04 | $995.00  
2 written test, 50 copies ea. | V04.41 | $30.00  
Instructor guide* | V04.40 | $59.00  
Site License | V04.50 | $500.00  

*Includes 1 student workbook, 1 technical guide & answer keys for tests

**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
5. Downhill Travel
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

To order, use form on page 19, Call 800.332.9448 Ext. 9509 or visit www.welding.org
# Gas Metal Arc Welding Advanced

**Complete Course:** 2 DVDs (1 hr. 52 min); 1 Instructor Guide; 2 written tests, 50 copies each  
**ITEM NO.** DV11

**Topics**
1. Gas Metal Arc Welding Advanced - Course Overview
2. Introduction to Gas Metal Arc Welding - Spray & Pulse Spray Transfer
3. Safety & Health of Welders
4. Equipment Set-Up, Operation & Shut-Down
5. Single V-Groove Weld, Butt Joint, (1G) Position - Spray
6. Introduction to Pulse Spray Transfer
7. Single V-Groove Weld, Butt Joint, (2G) Position - Pulse
8. Standard Destructive Test
9. Weldability of Aluminum Alloys
10. Fillet Weld, Lap & T-Joint (2F) Position
11. Fillet Weld, Lap & T-Joint (3F) Position
12. Single V-Groove Weld, Butt Joint, (3G) Position
15. Fillet Weld, Lap & T-Joint (2F) Position

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<td>Instructor guide*</td>
<td>V11.40</td>
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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  
**ITEM NO.** DV10

**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

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# Gas Metal Arc Welding Pipe

**Complete Course:** 2 DVDs (1 hr. 10 min); 1 Instructor Guide; 2 written tests, 50 copies each  
**ITEM NO.** DV15

**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 & Shut-Down
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, Uphill Fill & Cover

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**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.

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**Flux-Cored Arc Welding**

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**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. Fillet Welds, T-Joints, Horizontal, Vertical & Overhead Positions (Gas & Self-Shielded)
6. Electrode Classification & Selection
7. Single V-Groove Weld, Butt Joint, Horizontal (2G) 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)

**Gas Tungsten Arc Welding**

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**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 GTAW 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)

---

To order, use form on page 19, Call 800.332.9448 Ext. 9509 or visit www.welding.org
**COMPLETE TRAINING COURSES**

**Gas Tungsten Arc Welding 2-Inch Pipe**

Complete Course: 2 DVDs (1 hr. 30 min); 1 Instructor Guide; 1 written test, 50 copies each

**ITEM NO.** DV22

**Topics**

1. Gas Tungsten Arc Welding 2" Pipe - Course Overview
2. Introduction to Gas Tungsten Arc Welding
3. Safety & Health of Welders
4. Preparation & Assembly of an Open Root Pipe Joint
5. Single V-Groove Weld, Butt Joint, (2G) Pipe
6. Pipe Weld Quality
7. Single V-Groove Weld, Butt Joint, (2G) Pipe Destructive Test
8. Single V-Groove Weld, Butt Joint, (5G) Pipe

**Product**

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*Includes 1 student workbook, 1 technical guide & answer keys for tests

**Site License**

| V22.50 | $500.00 |

**Oxyacetylene Welding, Cutting & Brazing**

Complete Course: 4 DVDs (3 hrs. 6 min); 1 Instructor Guide; 4 written tests, 50 copies each

**ITEM NO.** DV30

**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. Weld 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, Braze Copper (2F) Position
30. Socket Joint, Braze Copper (5F) Position

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*Includes 1 student workbook, 1 technical guide & answer keys for tests

**Site License**

| V26.50 | $500.00 |

To order, use form on page 19, Call 800.332.9448 Ext. 9509 or visit www.welding.org
### Welding Procedures & Qualification

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

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**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

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<td>1 written test, 50 copies</td>
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<td>Instructor guide*</td>
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**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

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<td>1 written test, 50 copies</td>
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<td>Instructor guide*</td>
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**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

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<td>1 written test, 50 copies</td>
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<td>Instructor guide*</td>
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### Student Workbooks are listed on Pages 12-13
## Complete Training Courses

### Common Arc Welding Processes

<table>
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<tbody>
<tr>
<td>Complete Course: 2 DVDs (2 hrs, 10 min);</td>
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<tr>
<td>1 Instructor Guide; 2 written tests, 50 copies each</td>
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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

### Arc Welding Safety

<table>
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<tr>
<td>Safety and Health of Welders</td>
<td>DV91</td>
<td>$85.00</td>
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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

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<th>Product</th>
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<tr>
<td>Basic Metallurgy (DVD)</td>
<td>DV40</td>
<td>$325.00</td>
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Included in complete GTAW course (DV20.0)

Topics
- The metallurgy & weldability of carbon steel
- The welding characteristics of stainless steel
- The welding characteristics of aluminum

### Symbols for Welding, Blueprint Reading, Advanced Blueprint & Pipe Layout

<table>
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<td>Complete Symbols for Welding Course</td>
<td>DV80</td>
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<tr>
<td>Instructor guide</td>
<td>V80.40</td>
<td>$59.00</td>
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*Includes 1 student workbook & answer keys for test

### Symbols for Welding

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<tr>
<td>Complete Course: 1 DVD (58 min)</td>
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<tr>
<td>1 Instructor Guide</td>
<td>DV90</td>
<td>$59.00</td>
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**Topics**
- 1. Introduction
- 2. Basic Elements of the System
- 3. Weld Symbols for Length and Arrangement
- 4. Supplementary Symbols and Reference
- 5. Plug and Slot Welds
- 6. Spot Welds and Seam Welds
- 7. Groove Weld Symbols
- 9. Edge Weld and Combination Weld Symbols

<table>
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<th>Product</th>
<th>Item No.</th>
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*Includes 1 student workbook & answer keys for test

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*Includes 1 student workbook & answer keys for test

### Additional Pipe Layout Instructor Guides

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<td>Includes 1 student workbook &amp; answer keys</td>
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*Includes 1 student workbook & answer keys for tests

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<td>1 Instructor Guide</td>
<td>DV90</td>
<td>$59.00</td>
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</table>

*Includes 1 student workbook & answer keys for test

To order, use form on page 19, Call 800.332.9448 Ext. 9509 or visit www.welding.org
**Blueprint Reading for Welders & Fitters**

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<td>2.   Review of mathematics</td>
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<td>3.   Metrics and metric conversions</td>
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<td>4.   Review of welding symbols</td>
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<td>5.   Orthographic views</td>
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<td>6.   Standard drawing lines and symbols</td>
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<td>7.   Interpreting blueprint information</td>
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<td>8.   Surface and centerline relationships</td>
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<td>10.  Scale drawings</td>
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<td>11.  Dimensional tolerance and stock allowance</td>
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<td>12.  Set-up tools</td>
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<td>13.  Set-up applications</td>
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**Advanced Blueprint Reading**

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<td>1.   Development of Blueprints and Drawings</td>
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<td>2.   Standards, Codes and Specifications</td>
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<td>3.   Standard Plates and Shapes</td>
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<td>4.   Blueprint Reading</td>
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<td>5.   Calculating Measurements and Common Layout Tools</td>
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<td>6.   Pipe Essentials</td>
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<td>7.   Role of the Welder in Quality and Safety</td>
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<td>8.   Fabrication Tools</td>
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**Pipe Layout for Pipefitters & Welders**

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<td>2.   Review of Basic Shapes &amp; Pipefitter Terminology</td>
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<td>5.   Review of Geometric Calculations</td>
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<td>6.   Angles &amp; Angular Layout</td>
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<td>7.   Calculated Welded Offsets</td>
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<td>10.  Multiple Turn Layouts</td>
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<td>13.  Rolling Offsets</td>
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<td>14.  Fabricated Tees</td>
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<td>15.  Lateral Tees</td>
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<td>16.  Circumferential Sleeves</td>
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<td>18.  Elliptical Holes &amp; Blind Flanges</td>
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<td>19.  Fabricating Brackets</td>
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**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**
This workbook consists of 30 topics covering essential theory and safety related to oxyfuel operations, 19 job practice topics to help build skill and understanding of the processes, two topics to test skills in oxyfuel cutting and a course overview and introduction. 172 pages

Item No. EW369OAW ...................................................................................................................... List Price $24.00

**Shielded Metal Arc Welding Basic**
This workbook consists of 38 topics covering arc welding, safety, power sources, electrode classifications and selection. It includes 29 job practice topics, 8 essential theory topics, 4 testing topics and a course overview and introduction. 188 pages

Item No. EW369SMAWB ............................................................................................................. List Price $24.00

**Shielded Metal Arc Welding Structural**
This workbook consists of 19 topics to produce quality multi-pass groove welds with backing on 1” plate in the horizontal, vertical and overhead positions. It includes 9 job practice topics, 9 essential theory topics, course overview and introduction. 104 pages

Item No. EW369SMAWA1 ............................................................................................................. List Price $24.00

**Shielded Metal Arc Welding Pre-Pipe**
This workbook consists of 19 topics to produce quality open root single V-groove welds on 3/8” mild steel plate in horizontal, vertical and overhead positions. It includes 9 job practice topics, 9 essential theory topics, course overview and introduction. 100 pages

Item No. EW369SMAWA2 ............................................................................................................. List Price $24.00

**Shielded Metal Arc Welding 2 inch Pipe Uphill**
This workbook consists of 15 topics covering pipe welding, weld quality, uphill pipe procedures and preheating and interpass heat treatments. It includes 10 job practice topics, 4 essential theory topics and a course overview and introduction. 100 pages

Item No. EW369SMAWPU2 ............................................................................................................. List Price $24.00

**Shielded Metal Arc Welding 6 inch Pipe Uphill**
This workbook consists of 13 topics covering uphill pipe welding and weld quality. It teaches skills to produce quality multi pass welds on 6” diameter schedule 80 mild steel pipe in the 2G and 5G positions, using E6010 and E7018 electrodes. It includes 6 skill topics, 5 essential theory topics and an introduction and course overview. 96 pages

Item No. EW369SMAWPU6 ............................................................................................................. List Price $24.00

**Shielded Metal Arc Welding Pipe Downhill**
This workbook consists of 14 topics covering downhill pipe welding procedures and weld quality. It provides training to weld on open root carbon steel pipe in the 5G and 6G positions, using E7010 electrodes. The book includes 6 job practice topics, 2 testing topics and 4 essential theory topics. It also includes a course overview and introduction. 92 pages

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**Gas Metal Arc Welding Basic**
This workbook consists of 24 topics covering gas metal arc welding, safety, equipment adjustments, metal transfer and shielding gases. It provides training to weld in all positions on mild steel plate ranging from 11 gauge to 3/8 inch, single and multiple pass, using short circuit transfer. The book includes 19 job practices and 5 essential theory topics. It also includes a course overview and introduction. 96 pages

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**Gas Metal Arc Welding Advanced**
This workbook consists of 15 topics covering training on spray and pulsed-spray transfer for both carbon steel and aluminum. The book includes 9 job practice topics, 4 essential theory topics and a course overview and introduction. 77 pages

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Gas Tungsten Arc Welding 6 Inch Pipe
This workbook consists of 13 topics covering gas metal arc welding, preparation for welding pipe and pipe welding defects. It provides training to produce quality groove welds on 6 inch diameter schedule 80 steel pipe in the 2G and 5G positions. The book includes 6 job practice topics, 5 essential theory topics and a course overview and introduction. 76 pages

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Flux Cored Arc Welding
This workbook consists of 18 topics designed to develop welding skills on carbon steel plates ranging from 3/8” to 1” using .045 diameter dual shield flux-cored electrodes in all positions. The book includes 13 practice topics, 4 essential theory topics and a course overview and introduction. 94 pages

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This workbook consists of 33 topics covering gas tungsten arc welding, arc characteristics and welding safety. It provides training to make quality gas tungsten arc welds on 16 and 11 gauge mild steel, .062 inch gauge stainless steel and .125 inch aluminum, using both direct and alternating current. It includes 23 job practice topics, 9 essential theory topics and a course overview and introduction. 116 pages

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This workbook consists of 15 topics covering joint designs, programmable gas tungsten arc welding equipment and methods of welding carbon steel and stainless steel pipe. It provides training to weld on carbon steel open root, 6 inch diameter schedule 80 steel pipe in the 2G, 5G and 6G positions. It also uses gas tungsten arc welding process with stainless steel filler material to deposit the root and second pass and the shielded metal arc process to complete the weld. It includes 9 job practice topics, 5 essential theory topics and a course overview and introduction. 96 pages

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This workbook consists of 17 topics covering gas tungsten arc welding on thin gauge stainless steel and titanium. It provides training to produce quality welds on .040 inch to .061 inch stainless steel and titanium in the flat and horizontal positions. It also provides weld characteristics of titanium and stainless steel. It includes 8 job practice topics, 4 test topics and a course overview and introduction. 52 pages

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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.

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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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<td>Key to test</td>
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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.

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Gas Metal Arc Welding — The GMAW process, equipment, applications, procedures, safety and welding symbols are all explained in detail. 110 pages.

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Pipe Trades Handbook — Covers basic data on tube and pipe, national standards, fittings, valves, joints, offsets, pipe layout, mathematics and pipe welding. 534 pages.
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Pipe Fitters Bluebook — Contains charts, tables, drawings, instructions on pipe joints and layout. 176 pages.
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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 and dates offered.

<table>
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<td>WTB028</td>
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* The one week course GMA016 and GMA013 will be replaced with the two week courses GMA017 and GMA018

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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<td>CWS550</td>
<td>Preparation for AWS® CWS Examination Course (4 days)</td>
<td>$950.00</td>
</tr>
<tr>
<td>CWI540</td>
<td>Preparation for AWS® CWI® Certified Welding Inspector Examination Course (2 weeks)</td>
<td>$1700.00</td>
</tr>
<tr>
<td>RCW545</td>
<td>Preparation for Recertification of CWI® Course (1 week)</td>
<td>$850.00</td>
</tr>
<tr>
<td>CWI540-C</td>
<td>Preparation for AWS® CWI® Code Endorsement (2 days)</td>
<td>$500.00</td>
</tr>
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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.
HIWT Offers a variety of Logo Branded items.

- **Black Hooded Sweatshirt - PI23**
  - W/ Embroidered 3-color logo.
  - M, L, XL, XXL
  - $35.00

- **Grey Hooded Sweatshirt - PI01**
  - W/ Embroidered 3-color logo.
  - M, L, XL, XXL
  - $35.00

- **Grey T-Shirt - PI24**
  - W/ Silk Screen 3-color logo.
  - M, L, XL, XXL
  - $14.00

- **Navy Get-Wired T-Shirt – PI54**
  - Front Left Chest and Full back print
  - S, M, L, XL, XXL
  - $19.95

- **Dark Heather Gray T-Shirt – PI60**
  - Front Left Chest and Full back print
  - S, M, L, XL, XXL
  - $19.95

- **Black T-Shirt - PI40**
  - W/ small logo on front & large logo on back
  - M, L, XL, XXL
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  - W/ Embroidered 3-color logo.
  - M, L, XL, XXL
  - $29.95

- **Black Hooded Sweatshirt – PI61**
  - Front Left Chest and Full back print
  - S, M, L, XL, XXL
  - $35.00

- **Pink T-Shirt · PI02**
  - M, L, XL, XXL
  - $29.95

- **Maroon Golf Shirt - PI42**
  - 3.5 ounce, 100% polyester mesh.
  - W/ Silk Screen 3-color logo.
  - M, L, XL, XXL
  - $29.95

- **Grey T-Shirt · PI24**
  - Full back print
  - M, L, XL, XXL
  - $29.95

- **Grey Hooded Sweatshirt - PI01**
  - W/ Embroidered 3-color logo.
  - M, L, XL, XXL
  - $35.00

- **Pro Camouflage Realtree - P156**
  - Hardwoods design.
  - One size fits all.
  - $14.95

- **Two-Tone Garment Dyed Cap - PI34**
  - In pebble/black.
  - One size fits all.
  - $14.95

- **Black Cap – PI58**
  - One size fits all.
  - $14.95

- **Belt Buckle - PI09**
  - Solid brass
  - W/ raised logo
  - M, L, XL, XXL
  - $14.95

- **Oval Acrylic Key Chain - Pl15**
  - W/ full color imprint encased in indestructible acrylic key tag.
  - One size fits all.
  - $6.95

- **Sandwich Bill Charcoal Cap - Pl36**
  - W/ full color imprint encased in indestructible acrylic key tag.
  - One size fits all.
  - $6.95

- **Grey twill.**
  - Designed inside and out specifically for welders.
  - In black.
  - One size fits all.
  - $14.95

- **Black & silver ball point pen**
  - -- •.
  - On both sides. 8 oz.
  - $6.95

- **Spill proof lid. 16 oz.**
  - Designed inside and out specifically for welders.
  - One size fits all.
  - $14.95

- **The BSX Exreme Welders Gearpack - sgear**
  - Gearpack includes lots of storage room and accessory/tool pockets.
  - Spill proof lid. 16 oz.
  - $39.95

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.