Welding Syllabus

Course Title: Introduction to Welding for Small Businesses (Pipe Welding)
Course Code: WLDG 1041
Course Length: 36 hours

Course Description: Instruction using layout tools with demonstration and guided practices using some of the following welding processes: shield metal arc welding (SMAW), gas metal arc welding (GMAW), or any other approved welding process. Training will concentrate on multiple pass fillet welds on flat iron, pipe and C-perlin for barn construction. Cutting practice will be covered, by using a portable cutter and tract torch. Demonstration to include, flat bar, pipe and saddling pipe.

Learning Outcome: Identify proper safety equipment and tools and identify and select the proper welding process for a given application. Demonstrate skills training using more than one approved welding process; demonstrate ability to analyze situations and make decisions utilizing skills as taught concerning safety and electrode selections; and select the most economic and practical welding process for the given task.

Pre-requisites: None

Course Structure: Content: 36 hrs
Shop Safety 3
Shielded Metal Arc Welding (SMAW) 9
Gas Metal Arc Welding (GMAW) 9
Other welding processes and cutting 9
Oxy-fuel 6

Schedule: 12 Sessions 6:00 PM – 9:00 PM
Or any combination for 36 student contact hours

Evaluation: Student Assessments, Passing 70%

Books: Supplied as required

Reference: None
**Course Outline**

**Course Title:**  Introduction to Welding for Small Businesses  
**Course Code:**  WLDG 1015  
**Course Length:**  36 hours

**Course Description:** Instruction using layout tools with demonstration and guided practices using some of the following welding processes: shield metal arc welding (SMAW), gas metal arc welding (GMAW), or any other approved welding process. Training will concentrate on multiple pass fillet welds on flat iron, pipe and C-perlin for barn construction. Cutting practice will be covered, by using a portable cutter and tract torch. Demonstration to include, flat bar, pipe and saddling pipe.

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**Delivery Method:** Small group discussions/Demonstrations/Classroom

**Audience:** Beginner

**Pre-requisites:** None

**Course Structure:**

<table>
<thead>
<tr>
<th>Content</th>
<th>36 hrs</th>
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<tbody>
<tr>
<td>Shop Safety</td>
<td>3</td>
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<td>Shielded Metal Arc Welding (SMAW)</td>
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**Schedule:** 12 Sessions 6:00 PM – 9:00 PM Or any combination for 36 student contact hours

**Evaluation:** Student Assessments

**Books:** Supplied as required

**Reference:** None

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Introduction to Welding for Small Businesses (Pipe Welding)  
Revised 07/21/2014
Lesson Plan

A. Introduction:

1. Introduction
   Welcome
   Introductions
   Housekeeping

B. Content:

1. Lesson - Safety
   Symbol Usage
   Hazards
   Safety Standards
   EMF information

2. Lesson - Shielded Metal Arc Welding (SMAW)
   Equipment
   Assembly and Adjustment
   Electrodes
   Flat, Horizontal, Vertical and overhead welding positions
   Surfacing

3. Lesson - Gas Metal Arc Welding (GMAW)
   Equipment
   Assembly and Adjustment
   Flat, Horizontal, Vertical and overhead welding positions

4. Lesson - Oxy-fuel
   Equipment
   Assembly and Adjustment
   Flat, Horizontal, Vertical and overhead welding positions

5. Lesson – C-perlin and cutting
   Equipment
   Tools
   Procedures

6. Lesson – Gas Tungsten Arc Welding (GTAW)
   Equipment
   Assembly and Adjustment
   Flat, Horizontal, Vertical and overhead welding positions
D. Evaluation:

Student Assessments

STICK
1. Select the correct tip applicable to plate thickness. Demonstrate use of a cutting torch from attaching the regulators to lighting the torch.
2. Identify different types of rods, rod size and state how to apply the rod number.
3. Demonstrate a multiple pass fillet weld in the flat, horizontal and vertical positions.
4. Using a single beveled test plate with backing, prep and fit the plate and weld in the vertical and horizontal positions.
5. Demonstrate a weld on pipe.

MIG
1. Identify parts of the MIG machine and MIG gun from flow meter to drive rollers.
2. Identify parts of the MIG gun.
3. Demonstrate fillet welds in the flat, horizontal and vertical position.
4. Fit and weld test beveled test plate with backing in the vertical and horizontal position.
5. Demonstrate a weld on pipe.

Oxy-Fuel
1. Identify all parts of the machine and cutting torch.
2. Demonstrate how to “walk the cup” and welds on plate in the flat position.
3. Demonstrate a weld on pipe.

Cutting
Demonstrate cutting with a torch and plasma cutter

TIG
1. Identify parts of the TIG machine and TIG gun from flow meter to drive rollers.
2. Identify parts of the TIG gun.
3. Demonstrate fillet welds in the flat, horizontal and vertical position.
4. Fit and weld test beveled test plate with backing in the vertical and horizontal position.
5. Demonstrate a weld on pipe.

C. Closing:
• Re-Cap
  • Safety
  • Definitions
  • Procedures
  • Troubleshooting