



Western Technical College

32442317 Welding-Transportation

Course Outcome Summary

Course Information

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| Description | This course will cover welding safety, welding terminology, basic Shielded Metal Arc Welding (SMAW), manual oxy-fuel cutting, and plasma cutting as they relate to the transportation fields. |
| Career Cluster | Manufacturing |
| Instructional Level | Technical Diploma Courses |
| Total Credits | 1 |
| Total Hours | 36 |

Textbooks

No textbook required.

Learner Supplies

Six inch ankle high, quality leather work shoes - \$75.00-100.00. **Vendor:** To be discussed in class. Required.

Welding sateen jacket, welding work gloves, welding helmet - \$80.00. **Vendor:** To be discussed in class. Required.

Safety glasses with side eye protection that meet Z87 OSHA guidelines. **Vendor:** To be discussed in class. Required.

Success Abilities

1. Cultivate Passion: Expand a Growth-Mindset
2. Cultivate Passion: Increase Self-Awareness
3. Live Responsibly: Embrace Sustainability
4. Refine Professionalism: Act Ethically
5. Refine Professionalism: Improve Critical Thinking
6. Refine Professionalism: Participate Collaboratively
7. Refine Professionalism: Practice Effective Communication

Course Competencies

1. Perform basic Shielded Metal Arc Welding (SMAW) operations.

Assessment Strategies

- 1.1. Skill Demonstration

Criteria

You will know you are successful when

- 1.1. you adhere to welding safety and housekeeping guidelines.
- 1.2. you set-up the welding power source.
- 1.3. you make 6-inch long surfacing welds in the 1F position.
- 1.4. you make 6-inch long fillet welds in the 1F position.
- 1.5. you make 6-inch long fillet welds in the 2F position.
- 1.6. you make a 6-inch long groove weld in the 1F position.
- 1.7. you make a 6-inch long groove weld in the 2F position.
- 1.8. you produce joints using SMAW processes.
- 1.9. you visually inspect weld.

Learning Objectives

- 1.a. Examine safety precautions when using SMAW equipment.
- 1.b. Choose appropriate current type and polarity for the designated electrode.
- 1.c. Determine appropriate amperage setting for the designated electrode and base metal.
- 1.d. Demonstrate proper arc length, electrode angles, and travel speed while welding.
- 1.e. Practice SMAW welds to produce surface and fillet welds in the 1F and 2F positions.

2. Perform manual oxy-fuel cutting.

Assessment Strategies

- 2.1. Skill Demonstration

Criteria

You will know you are successful when

- 2.1. you setup the oxy-fuel cutting equipment.
- 2.2. you demonstrate the 16 safety steps of oxy fuel set up, operation, and shut down.
- 2.3. you demonstrate the ability to cut a straight cut free hand.
- 2.4. you demonstrate the ability to free-hand cut a circle.
- 2.5. you clean up the area when finished.

Learning Objectives

- 2.a. Identify types of metals commonly used for oxy-fuel cutting.
- 2.b. Examine equipment setup for oxy-fuel cutting.
- 2.c. Examine techniques for free hand cutting.
- 2.d. Practice oxy-fuel cutting.
- 2.e. Identify safety concerns and precautions for oxy-fuel cutting.

3. Demonstrate plasma cutting.

Assessment Strategies

3.1. Skill Demonstration

Criteria

You will know you are successful when

- 3.1. you setup plasma cutter.
- 3.2. you demonstrate the ability to cut a straight cut free hand.
- 3.3. you demonstrate ability to free hand cut a circle and grind edges smooth.
- 3.4. you clean up area when finished.

Learning Objectives

- 3.a. Examine equipment setup for plasma cutting.
- 3.b. Examine techniques for free-hand cutting.
- 3.c. Practice plasma cutting.
- 3.d. Identify safety concerns and precautions for plasma cutting.

4. Demonstrate removing fasteners with a torch.

Assessment Strategies

- 4.1. Skill Demonstration

Criteria

You will know you are successful when

- 4.1. you setup the torch.
- 4.2. you remove a nut without damaging bolt threads.
- 4.3. you clean up area when finished.

Learning Objectives

- 4.a. Examine methods for removing locked bolts.
- 4.b. Practice cutting a nut off of a bolt without damaging threads.
- 4.c. Identify safety concerns and precautions for OF cutting.