



Western Technical College

## 31442326 Wire Feed Welding 3

### Course Outcome Summary

#### Course Information

<b>Description</b>	Advanced GMAW and FCAW practices on steel, stainless steel, and Aluminum.
<b>Career Cluster</b>	Manufacturing
<b>Instructional Level</b>	Technical Diploma Courses
<b>Total Credits</b>	2
<b>Total Hours</b>	72

#### Pre/Corequisites

Pre/Corequisite 31442316 Wirefeed Welding 2

#### Textbooks

No textbook required.

#### Learner Supplies

Welding sateen jacket, welding work gloves (long leather gauntlet, short leather work gloves, TIG welding gloves), welding helmet, leather cape and sleeves. **Vendor:** To be discussed in class. Required.

Tools: 25' steel tape measure, metal combination square, and scribe. **Vendor:** To be discussed in class. Required.

Six-inch leather steel toed work boots - \$75.00-150.00. **Vendor:** To be discussed in class. Required.

Safety glasses with side eye protection that meet Z87 OSHA guidelines. **Vendor:** Campus Shop. Required.

## Program Outcomes

1. Demonstrate industry recognized safety practices
2. Interpret welding drawings
3. Produce gas metal arc welds (GMAW)
4. Produce flux core welds
5. Perform thermal cutting

## Course Competencies

### 1. Produce welds on pipe using wirefeed processes.

#### Assessment Strategies

- 1.1. Demonstration

#### Criteria

*You will know you are successful when*

- 1.1. you follow PPE and safety regulations.
- 1.2. you produce welds that meet the minimum acceptance criteria of 2G pipe welds.
- 1.3. you produce welds that meet the minimum acceptance criteria of 5G pipe welds.
- 1.4. you apply the correct transfer methods.
- 1.5. you perform weld inspection.

#### Learning Objectives

- 1.a. Explore hand motion and weld puddle manipulation technique for wire feed welding on pipe.
- 1.b. Describe how work and travel angles influence the shape of the weld.
- 1.c. Identify how work and travel angles change depending on weld position and joint design for pipe.
- 1.d. Practice multi-pass welds.
- 1.e. Practice a variety of groove welds on pipe using transfer methods.

### 2. Produce fillet welds on stainless steel and aluminum in all positions.

#### Assessment Strategies

- 2.1. Demonstration

#### Criteria

*You will know you are successful when*

- 2.1. you follow PPE and safety regulations.
- 2.2. you produce fillet welds that meet the minimum weld standard of 1F welds.
- 2.3. you produce fillet welds meet the minimum acceptance criteria of 2F welds.
- 2.4. you produce fillet welds meet the minimum acceptance criteria of 3F welds.
- 2.5. you produce fillet welds meet the minimum acceptance criteria of 4F welds.
- 2.6. you apply the correct transfer method for the weld.
- 2.7. you perform weld inspection.

#### Learning Objectives

- 2.a. Explore hand motion and weld puddle manipulation technique for wire feed welding.
- 2.b. Describe how work and travel angles influence the shape of the weld.
- 2.c. Identify how work and travel angles change depending on weld position and joint design.
- 2.d. Practice multi-pass welds.
- 2.e. Practice a variety of fillets welds using transfer methods.

### 3. Produce groove welds on stainless steel and aluminum in all positions.

#### Assessment Strategies

- 3.1. Demonstration

## Criteria

*You will know you are successful when*

- 3.1. you follow PPE and safety regulations.
- 3.2. you produce welds that meet the minimum acceptance criteria of 1G welds.
- 3.3. you produce welds that meet the minimum acceptance criteria of 2G welds.
- 3.4. you produce welds that meet the minimum acceptance criteria of 3G welds.
- 3.5. you produce welds that meet the minimum acceptance criteria of 4G welds.
- 3.6. you apply the correct transfer method for the weld.
- 3.7. you perform weld inspection.

## Learning Objectives

- 3.a. Explore hand motion and weld puddle manipulation technique for wire feed welding.
- 3.b. Describe how work and travel angles influence the shape of the weld.
- 3.c. Identify how work and travel angles change depending on weld position and joint design.
- 3.d. Practice multi-pass welds.
- 3.e. Practice a variety of groove welds using transfer methods.

## 4. Interpret Weld Procedure Specification (WPS) sheets.

### Assessment Strategies

- 4.1. Demonstration

## Criteria

*You will know you are successful when*

- 4.1. you describe the weld joint specified.
- 4.2. you select the material, filler wire, and shielding gas to be used.
- 4.3. you determine the welding process to be used.
- 4.4. you set up the welding machine to produce the weld following the specifications.

## Learning Objectives

- 4.a. Identify materials used for weld coupons
- 4.b. Discuss different shielding methods.
- 4.c. Determine the shielding being used for the weld
- 4.d. Identify filler wire and characteristics
- 4.e. Determine the filler wire used for the weld
- 4.f. Explore different electrical power options for TIG welding
- 4.g. Determine welding process and electrical characteristics of the weld
- 4.h. Determine the range of parameters allowed for the weld
- 4.i. Explore the importance of adhering to the specified parameter range for the weld