Western Technical College

31442306 Wire Feed Welding 1

Course Outcome Summary

Course Information

Description	The study of welding techniques and applications of the GMAW and FCAW processes in the flat and horizontal positions on ferrous materials (steel).
Career Cluster	Manufacturing
Instructional Level	Technical Diploma Courses
Total Credits	2
Total Hours	72

Textbooks

No textbook required.

Learner Supplies

Welding sateen jacket, welding work gloves (long leather gauntlet, short leather work 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.

Success Abilities

1. Cultivate Passion: Expand a Growth-Mindset
2. Live Responsibly: Embrace Sustainability
3. Refine Professionalism: Practice Effective Communication

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. Examine components of wire feed welding.

Assessment Strategies

1.1. Skill Demonstration

Criteria

You will know you are successful when

1.1. you load the correct consumables into the machine for the process and material.
1.2. you identify the correct gas to be used for each process.
1.3. you set your machine to the correct settings for each process.
1.4. you set up GMAW/FCAW welding equipment according to the manufacturer's recommendations.
1.5. you follow safety requirements (including PPE) for all welding processes.

Learning Objectives

1.a. Explore modes of metal transfer (short-circuit, globular, axial spray, and pulsed spray).
1.b. Identify shielding gases for GMAW & FCAW (inert, reactive, binary, ternary).
1.c. Identify industry-specific terminology.
1.d. Explore types of wire: flux core, metal core, solid.
1.e. Interpret electrical theory related to wire feed processes.
1.f. Setup station for Gas Metal Arc Welding (GMAW) operations.
1.g. Set up station for Flux Core Arc Welding (FCAW).

2. Perform Weld inspection.

Assessment Strategies

2.1. Skill Demonstration

Criteria

You will know you are successful when

2.1. you will identify visual defects.
2.2. you take measurements for dimensional inspection.
2.3. you perform destructive testing.
2.4. you describe nondestructive testing techniques.

Learning Objectives

2.a. Identify any visual or surface defects.
2.b. Select measuring tools specific to welding.
2.c. Measure weld parts.
2.d. Apply destructive testing techniques that can be used for various welds.
2.e. Identify non destructive testing techniques.
2.f. Determine if weld can be repaired or re-done.

3. Produce fillet welds in flat and horizontal positions for various joints using wire feed processes.

Assessment Strategies

3.1. Demonstration

Criteria

You will know you are successful when

3.1. You produce fillet welds that meet the minimum weld standard on 2F T joints.
3.2. You produce fillet welds meet the minimum acceptance criteria on 2F Lap joints.
3.3. You produce fillet welds meet the minimum acceptance criteria on 1F Corner joints.
3.4. you apply the correct transfer method for the weld.
3.5. you follow PPE and safety precautions.

Learning Objectives

3.a. Explore hand motion and weld puddle manipulation technique for wire feed welding.
3.b. Identify how work and travel angles influence the shape of the weld.
3.c. Describe how work and travel angles change depending on weld position and joint design.
3.d. Identify the effect of gas flow rate on the weld puddle.
3.e. Adjust gas flow rate for different positions and joint designs.
3.f. Practice a variety of fillet welds using transfer methods.
3.g. Practice multi-pass welds.

4. Produce groove welds in flat and horizontal positions for various joints using wire feed processes.

Assessment Strategies

4.1. Demonstration

Criteria

You will know you are successful when

4.1. you produce welds that meet the minimum acceptance criteria on 1G on joints.
4.2. you produce welds that meet the minimum acceptance criteria on 2G on joints.
4.3. you apply the correct transfer method for the weld.
4.4. you follow PPE and safety precautions.

Learning Objectives

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