# Agricultural Welding Course No. 18404 Credit: 1.0

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| --- | --- | --- | --- |
| **Student name:**  |  | **Graduation Date:** |  |

Pathways and CIP Codes:Power, Structural & Technical Systems (01.0201); Manufacturing (48.0000); Business Management & Entrepreneurship (52.0799);

Course Description: **Technical Level:** Formerly known as Agriculture Welding, Agricultural Metal Fabrication Technology courses provide students with the skills and knowledge that are specifically applicable to the tools and equipment used in the agricultural industry. In learning to apply basic industrial knowledge and skills (engines, power, welding, and carpentry, among others), students may explore a broad range of topics, including the operation, mechanics, and care of farm tools and machines; the construction and repair of structures integral to farm operations; an introduction or review of electricity and power; and safety procedures.

Directions:The following competencies are required for full approval of this course. Check the appropriate number to indicate the level of competency reached for learner evaluation.

**RATING SCALE:**

4. Exemplary Achievement: Student possesses outstanding knowledge, skills or professional attitude.

3. Proficient Achievement:Student demonstrates good knowledge, skills or professional attitude. Requires limited supervision.

2. Limited Achievement:Student demonstrates fragmented knowledge, skills or professional attitude. Requires close supervision.

1. Inadequate Achievement:Student lacks knowledge, skills or professional attitude.

0. No Instruction/Training:Student has not received instruction or training in this area.

## Benchmark 1: Welding Industry and Careers

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Describe 10 careers in the field of ag welding |  |
| 1.2 | Explain the importance of welding and construction in the local economy  |  |
| 1.3 | Identify local businesses that require ag welding skills  |  |
| 1.4 | List the causes of accidents in the workplace |  |
| 1.5 | Write a 1 and ½ page paper over two agriculture careers of interest  |  |
| 1.6 | Select an agriculture career, research, and write a ½ page report over the education needed |  |

## Benchmark 2: SMAW (Arc) Welding/Lab Activities

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Explain the physical processes of arc welding  |  |
| 2.2 | List the proper arc welding safety guidelines  |  |
| 2.3 | Identify arc welding safety hazards  |  |
| 2.4 | Identify pieces of arc welding equipment  |  |
| 2.5 | Differentiate between AC and DC welding  |  |
| 2.6 | Demonstrate a 6011 series arc welds: Flat - stringer, pad, butt, T, lap; Horizontal - stringer, butt, lap; Vertical - stringer, butt, T, lap |  |
| 2.7 | Demonstrate a 6013 series arc welds: Flat - stringer, pad, butt, T, lap; Horizontal - stringer, butt, lap; Vertical - stringer, butt, T, lap |  |
| 2.8 | Demonstrate 7018 pipe-on-pipe butt in flat position |  |
| 2.9 | Demonstrate 7018 pipe-on-plate T-weld in flat position |  |

## Benchmark 3: GMAW (MIG) Welding/Lab Activities

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 3.1 | List the proper MIG welding safety guidelines  |  |
| 3.2 | Identify MIG welding safety hazards  |  |
| 3.3 | Identify pieces of MIG welding equipment |  |
| 3.4 | Explain the physical processes of MIG welding  |  |
| 3.5 | Demonstrate a MIG series welds: Flat - stringer, pad, butt, T, lap; Horizontal - stringer, butt, lap; Vertical - stringer, butt, T, lap |  |
| 3.6 | Demonstrate MIG pipe-on-pipe butt in flat position |  |
| 3.7 | Demonstrate MIG pipe-on-plate T-weld in flat position |  |

## Benchmark 4: Oxy-Acetylene Welding and Cutting/Lab Activities

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 4.1 | List the oxy-acetylene welding and brazing safety guidelines  |  |
| 4.2 | List the oxy-acetylene cutting safety guidelines  |  |
| 4.3 | Identify oxy-acetylene cutting, welding, and brazing equipment |  |
| 4.4 | Explain the physical processes of oxy-acetylene welding, cutting, and brazing  |  |
| 4.5 | Demonstrate an oxy-acetylene filler bead weld |  |
| 4.6 | Demonstrate an oxy-acetylene filler butt weld |  |
| 4.7 | Demonstrate an oxy-acetylene bead weld |  |
| 4.8 | Demonstrate a braze butt weld |  |
| 4.9 | Demonstrate a braze lap weld |  |
| 4.10 | Demonstrate oxy-acetylene cutting techniques: straight – freehand, guided; round/circle – freehand, guided. |  |

## Benchmark 5: Plasma Cutting/Lab Activities

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 5.1 | List the plasma cutting safety guidelines  |  |
| 5.2 | Identify plasma cutting equipment |  |
| 5.3 | Explain the processes of plasma cutting and proper the techniques involved. |  |
| 5.4 | Demonstrate plasma cutting techniques: straight – freehand, guided; round/circle – freehand, guided. |  |
| 5.5 | Demonstrate proper setups and adjustments for different metal thicknesses |  |

## Benchmark 6: General Shop Safety & Machine Use/Lab Activities

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 6.1 | Explain the use and function of the bench grinder  |  |
| 6.2 | Explain the use and function of the hand grinder  |  |
| 6.3 | Explain the use and function of the chop saw  |  |
| 6.4 | Explain the use and function of the hot saw  |  |
| 6.5 | Explain the use and function of the floor sheer  |  |
| 6.6 | Explain the use and function of the drill press  |  |
| 6.7 | Explain the use and function of power hand drills  |  |
| 6.8 | Explain the use and function of pneumatic tools  |  |
| 6.9 | List the proper bench grinder safety guidelines |  |
| 6.10 | List the proper hand grinder safety guidelines |  |
| 6.11 | List the proper chop saw safety guidelines |  |
| 6.12 | List the proper hot saw safety guidelines |  |
| 6.13 | List the proper floor sheer safety guidelines |  |
| 6.14 | List the proper drill press safety guidelines |  |
| 6.15 | List the proper power hand tools safety guidelines |  |
| 6.16 | List the proper pneumatic tools safety guidelines |  |
| 6.17 | Demonstrate the proper bench grinder safety guidelines |  |
| 6.18 | Demonstrate the proper hand grinder safety guidelines |  |
| 6.19 | Demonstrate the proper chop saw safety guidelines |  |
| 6.20 | Demonstrate the proper hot saw safety guidelines |  |
| 6.21 | Demonstrate the proper floor sheer safety guidelines |  |
| 6.22 | Demonstrate the proper drill press safety guidelines |  |
| 6.23 | Demonstrate the proper power hand tools safety guidelines |  |
| 6.24 | Demonstrate the proper pneumatic tools safety guidelines |  |

## Benchmark 7: Safety & Lab Orientation/Lab Activities

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 7.1 | Identify and demonstrate proper methods of shop/lab clean-up |  |
| 7.2 | Identify various tool storage locations |  |
| 7.3 | Learn the components of the fire triangle |  |
| 7.4 | Explain the proper use of a fire extinguisher |  |
| 7.5 | Explain proper shop safety color coding |  |
| 7.6 | Complete a shop/lab safety test with 100% accuracy |  |

I certify that the student has received training in the areas indicated.

Instructor Signature:

For more information, contact:

CTE Pathways Help Desk

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