# Agricultural Welding I Course No. 18404 Credit: 1.0

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

Pathways and CIP Codes: **Agricultural Technology and Mechanical Systems (01.0201); Diversified Agricultural Science (01.0000);** Manufacturing (48.0000); Business Management & Entrepreneurship (52.0799)

Course Description: **Technical Level:** This course provides 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.

Special Note: The AFNR College and Career Ready Skills are to be taught throughout the course utilizing FFA and SAE programming found at the Kansas Ag Ed website. Specific activities may be found in the SAE for All Teachers Guide and at National FFA.org. The AFNR College and Career Ready Skills competencies can be found at Kansas Ag Ed.

Opportunities in Agriculture Education & FFA:Classroom and laboratory instruction integrates and/or is supplemented by experiential, project, and leadership and personal development through FFA .Students should be introduced to FFA through leadership activities and College and Career Ready Skills. Specific FFA information and activities may be found in the “National FFA Student Handbook, 16thedition”. Student activities, scoring rubrics, grading examples, and teacher lessons are all found in the “FFA Student Handbook Teachers Guide”. Additional information can be found at [www.ffa.org](http://www.ffa.org/).

Workplace Skills, Supervised Agricultural Experience and Record Keeping: Classroom and laboratory instruction integratesand/or is supplemented by experiential, project, and work based learning through SAE. Specific SAE activities that support the College and Career Ready Skills may be found in the “SAE for All Guide”. Students should be introduced to Foundational SAE’s and the AET student portfolio system. Student activities, scoring rubrics, grading examples, and teacher lessons are all found in the “SAE for All Teachers Guide”. Additional information is found in the SAE Individual Learning Guides and Teacher Editions and in the AFNR College and Career Ready Competency Profile found at *Kansas Ag* *Ed.*

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.

**Prerequisite: either 18001 – Introduction to Agricultural or 18002 - Agriscience**

## Benchmark 1: Welding Industry and Careers

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Describe ten careers in the field of ag welding. |  |
| 1.2 | Explain the importance of welding and construction in the local economy. |  |
| 1.3 | Identify and contact local businesses that require ag welding skills.  |  |
| 1.4 | List the causes of accidents in the workplace. |  |
| 1.5 | Write a 1½ 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: Safety & Lab Orientation/Lab Activities

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Complete a shop/lab safety test with 100% accuracy. |  |
| 2.2 | Identify and demonstrate proper methods of shop/lab clean-up. |  |
| 2.3 | Identify common hand tools and their proper function as they pertain to the welding industry. |  |
| 2.4 | Distinguish and Identify the components of the fire triangle. |  |
| 2.5 | Explain the proper use of a fire extinguisher. |  |
| 2.6 | Complete a Shop Safety Contract / Release form. |  |
| 2.7 | Demonstrate proper inspection and operation of equipment for each welding or thermal cutting process used. |  |

## Benchmark 3: SMAW Welding/Lab Activities

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 3.1 | Explain the physical processes of SMAW welding.  |  |
| 3.2 | List the proper arc welding safety guidelines.  |  |
| 3.3 | Identify SMAW welding safety hazards.  |  |
| 3.4 | Identify pieces of SMAW welding equipment.  |  |
| 3.5 | Differentiate between AC and DC welding. |  |
| 3.6 | Demonstrate a 6010/6011 SMAW welds - Flat, Horizontal, Vertical- pad, fillet, butt. |  |
| 3.7 | Demonstrate 7018 SMAW welds- Flat, Horizontal, Vertical- pad, fillet, butt. |  |

Benchmark 4: GMAW WELDING/LAB ACTIVITIES

Competencies

| # | DESCRIPTION | RATING |
| --- | --- | --- |
| 4.1 | List the proper GMAW welding safety guidelines.  |  |
| 4.2 | Identify GMAW welding safety hazards.  |  |
| 4.3 | Identify pieces of GMAW welding equipment. |  |
| 4.4 | Explain the physical processes of GMAW welding.  |  |
| 4.5 | Demonstrate GMAW welds- Flat, Horizontal, Vertical- pad, fillet, butt. |  |

## Benchmark 5: Oxy-Acetylene Welding and Cutting/Lab Activities

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 5.1 | List the oxy-acetylene welding and brazing safety guidelines.  |  |
| 5.2 | List the oxy-acetylene cutting safety guidelines.  |  |
| 5.3 | Identify oxy-acetylene cutting, welding, and brazing equipment. |  |
| 5.4 | Explain the physical processes of oxy-acetylene welding, cutting, and brazing. |  |
| 5.5 | Practice an oxy-acetylene - butt weld with and without (autogenous) filler. |  |
| 5.6 | Demonstrate oxy-acetylene cutting techniques: straight – freehand, and guided. |  |
| 5.7 | Demonstrate oxy-acteylene cutting techniques: circle- freehand and guided. |  |

## Benchmark 6: Plasma Cutting/Lab Activities

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 6.1 | List the plasma cutting safety guidelines.  |  |
| 6.2 | Identify plasma cutting equipment. |  |
| 6.3 | Explain and demonstrate the processes of plasma cutting and proper techniques involved with various metal thicknesses. |  |
| 6.4 | Demonstrate plasma cutting techniques: straight – freehand and guided. |  |
| 6.5 | Demonstrate plasma cutting techniques: circle – freehand and guided. |  |

## Benchmark 7: General Shop & Machine Use/Lab Activities

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 7.1 | List and explain the use and function of the bench grinder.  |  |
| 7.2 | List and explain the use and function of the hand grinder.  |  |
| 7.3 | List and explain the use and function of sawing type equipment. |  |
| 7.4 | List and explain the use and function of shearing type equipment. |  |
| 7.5 | List and explain the use and function of drilling type equpment. |  |
| 7.6 | List and explain the use and function of pneumatic tools.  |  |
| 7.7 | Demonstrate proper bench grinder safety guidelines. |  |
| 7.8 | Demonstrate proper hand grinder safety guidelines. |  |
| 7.9 | Demonstrate proper sawing type equipment safety guidelines. |  |
| 7.10 | Demonstrate proper shearing type equipment safety guidelines. |  |
| 7.11 | Demonstrate proper drilling type equipment safety guidelines. |  |
| 7.12 | Demonstrate proper power hand tools safety guidelines. |  |
| 7.13 | Demonstrate proper pneumatic tools safety guidelines. |  |

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

Instructor Signature:

For more information, contact:

CTE Pathways Help Desk

(785) 296-4908

pathwayshelpdesk@ksde.org



900 S.W. Jackson Street, Suite 102

Topeka, Kansas 66612-1212

[https://www.ksde.org](https://www.ksde.org/)

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