

STRANDS AND STANDARDS

WELDING TECHNICIAN – ENTRY LEVEL



Course Description

This is an entry level course that will teach basic welding skills. This course will prepare students to apply technical knowledge and skill in the workplace and in project construction. In this course, students will learn and practice knowledge, attitude, skills, and habits required for performing tasks autonomously, including the selection and use of appropriate techniques and equipment with minimum supervision.

Intended Grade Level	10-12
Units of Credit	1.0
Core Code	40.10.00.00.110
Concurrent Enrollment Core Code	40.10.00.13.110
Prerequisite	None
Skill Certification Test Number	595
Test Weight	1.0
License Type	CTE and/or Secondary Education 6-12
Required Endorsement(s)	
Endorsement 1	Welding
Endorsement 2	N/A
Endorsement 3	N/A



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STRAND 1

Students will understand welding orientation.

Standard 1

Identify welding processes.

Standard 2

Prepare time or job cards, reports, or records.

Standard 3

Follow verbal instructions to complete work assignments.

Standard 4

Follow written details to complete work assignments.

STRAND 2

Students will understand and use welding safety and first aid.

Standard 1

Complete a student safety pledge (disclosure statement).

Standard 2

Respond to first aid requirements.

Standard 3

Follow safe practices.

Standard 4

Perform housekeeping duties.

Standard 5

Successfully complete safety tests on equipment use.

Performance Skill

Understand and use welding safety and first aid.

- Complete a student safety pledge (disclosure statement).
- Respond to first aid requirements.
- Follow safe practices.
- Perform housekeeping duties.
- Successfully complete safety tests on equipment use.

STRAND 3

Students will identify welding tools and equipment.

Standard 1

Identify basic welding hand tools (e.g., safety glasses, welding helmet, chipping hammer, etc.).

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Standard 2

Identify basic power tools and equipment (e.g., shielded metal arc welder, gas metal arc welder, bench grinder, etc.).

Performance Skill

Identify welding tools and equipment.

- Identify basic welding hand tools (e.g., safety glasses, welding helmet, chipping hammer, etc.).
- Identify basic power tools and equipment (e.g., shielded metal arc welder, gas metal arc welder, bench grinder, etc.).

STRAND 4

Students will use basic math and measuring skills.

Standard 1

Perform basic math conversions from fractions to decimals.

Standard 2

Read and correctly use a tape measure, ruler, and square.

Standard 3

Perform basic layout techniques.

Performance Skill

Use basic math and measuring skills.

- Perform basic math conversions from fractions to decimals.
- Read and correctly use a tape measure, ruler, and square.
- Perform basic layout techniques.

STRAND 5

Students will read and interpret welding blueprints.

Standard 1

Apply information found in the information block of the drawing.

Standard 2

Identify basic views used in blueprints, including assembly, detail, and fit-up drawings.

Standard 3

Identify common types of lines used in blueprints, including object, hidden, center, and construction lines.

Performance Skill

Read and interpret welding blueprints.

- Apply information found in the information block of the drawing.

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- Identify basic views used in blueprints, including assembly, detail, and fit-up drawings.
- Identify common types of lines used in blueprints, including object, hidden, center, and construction lines.

STRAND 6

Students will identify and apply basic welding symbols.

Standard 1

Identify and interpret basic welding symbols (e.g., square groove weld, fillet weld, field weld, reference line, etc.).

Standard 2

Draw welding symbols for given specifications.

Standard 3

Interpret a welding print and welding procedure specifications.

Performance Skill

Identify and apply basic welding symbols.

- Identify and interpret basic welding symbols (e.g., square groove weld, fillet weld, field weld, reference line, etc.).
- Draw welding symbols for given specifications.
- Interpret a welding print and welding procedure specifications.

STRAND 7

Students will use the Shielded Metal Arc Welding (SMAW) process.

Standard 1

Set up for SMAW operations on carbon steel.

Standard 2

Start and restart an arc and run a bead on carbon steel.

Standard 3

Build a weld pad on carbon steel in the flat position.

Standard 4

Make 1F (flat position-fillet weld) welds on carbon steel.

Standard 5

Make 2F (horizontal position-fillet weld) welds on carbon steel.

Standard 6

Make 1G (flat position-groove weld) welds on carbon steel.

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Standard 7

Make 2G (horizontal position-groove weld) welds on carbon steel.

Performance Skill

Use the Shielded Metal Arc Welding (SMAW) process.

- Set up for SMAW operations on carbon steel.
- Start and restart an arc and run a bead on carbon steel.
- Build a weld pad on carbon steel in the flat position.
- Make 1F (flat position-fillet weld) welds on carbon steel.
- Make 2F (horizontal position-fillet weld) welds on carbon steel.
- Make 1G (flat position-groove weld) welds on carbon steel.
- Make 2G (horizontal position-groove weld) welds on carbon steel.

STRAND 8

Students will use the manual oxyfuel gas cutting process.

Standard 1

Perform safety inspections of equipment and accessories.

Standard 2

Set up for manual oxyfuel gas cutting operations on carbon steel.

Standard 3

Perform straight cutting operations on carbon steel.

Standard 4

Perform shape-cutting operations on carbon steel.

Standard 5

Perform bevel-cutting operations on carbon steel.

Standard 6

Pierce a hole through a carbon steel plate.

Performance Skill

Use the manual oxyfuel gas cutting process.

- Perform safety inspections of equipment and accessories.
- Set up for manual oxyfuel gas cutting operations on carbon steel.
- Perform straight cutting operations on carbon steel.
- Perform shape-cutting operations on carbon steel.
- Perform bevel-cutting operations on carbon steel.
- Pierce a hole through a carbon steel plate.

STRAND 9

Students will use the Gas Metal Arc Welding (GMAW) process.

Standard 1

Set up for GMAW operations on carbon steel.

Standard 2

Start and restart an arc and backfill at the edge while running a bead on carbon steel.

Standard 3

Use Short Circuit Transfer welding process to make 1F (flat position-fillet weld) welds on carbon steel.

Standard 4

Use Short Circuit Transfer welding process to make 2F (horizontal position-fillet weld) welds on carbon steel.

Standard 5

Use Short Circuit Transfer welding process to make 1F (flat position-fillet weld) multi-pass weld on carbon steel.

Standard 6

Use Short Circuit Transfer welding process to make 1G (flat position-groove weld) welds on carbon steel.

Standard 7

Use Short Circuit Transfer welding process to make 2G (horizontal position-groove weld) welds on carbon steel.

Performance Skill

Use the Gas Metal Arc Welding (GMAW) process.

- Set up for GMAW operations on carbon steel.
- Start and restart an arc and backfill at the edge while running a bead on carbon steel.
- Use Short Circuit Transfer welding process to make 1F (flat position-fillet weld) welds on carbon steel.
- Use Short Circuit Transfer welding process to make 2F (horizontal position-fillet weld) welds on carbon steel.
- Use Short Circuit Transfer welding process to make 1F (flat position-fillet weld) multi-pass weld on carbon steel.
- Use Short Circuit Transfer welding process to make 1G (flat position-groove weld) welds on carbon steel.
- Use Short Circuit Transfer welding process to make 2G (horizontal position-groove weld) welds on carbon steel.

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STRAND 10

Students will understand the importance of career readiness skills as it relates to the workplace and outlined in the SkillsUSA Framework – Level 1.

Standard 1

Understand and demonstrate the attitude of cooperation.

- Develop awareness of cultural diversity and equality issues.
- Demonstrate effective communication with others.
- Apply team skills to a group project.
- Identify and apply conflict resolution skills.

Standard 2

Understand and demonstrate the ability of being resourceful and innovative.

- Discover self-motivation techniques and establish short-term goals.
- Measure/modify short-term goals.
- Review a professional journal and develop a three- to five-minute presentation.

Standard 3

Plan for your future career.

- Complete a self-assessment and identify individual learning styles.
- Define future occupations.
- Identify the components of an employment portfolio.
- List proficiency in program competencies.
- Complete a survey for employment opportunities.
- Create a job application.
- Assemble your employment portfolio.
- Employability skills: evaluate program comprehension.

Standard 4

Understand and demonstrate the ability to manage a project.

- Apply team skills to a group project.
- Observe and critique a meeting.
- Demonstrate business meeting skills.
- Explore supervisory and management roles in an organization.
- Identify and apply conflict resolution skills.
- Demonstrate evaluation skills.
- Manage a project and evaluate others.

Skill Certificate Test Points by Strand

Test Name	Test #	Number of Test Points by Strand									Total Points	Total Questions
		1	2	3	4	5	6	7	8	9		
Welding Technician – Entry	595	3	18	9	5	1	2	9	9	8	64	52