

STRANDS AND STANDARDS

WELDING TECHNICIAN – ADVANCED LEVEL



Course Description

This is an advanced welding skills course. This course will teach students the processes that will prepare them 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 to perform tasks autonomously and with minimum supervision, including the selection and use of appropriate techniques and equipment.

Intended Grade Level	11-12
Units of Credit	1.0
Core Code	40.10.00.00.114
Concurrent Enrollment Core Code	40.10.00.13.114
Prerequisite	Welding Technician-Intermediate Level
Skill Certification Test Number	597
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



WELDING TECHNICIAN – ADVANCED LEVEL

STRAND 1

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 2

Students will fabricate parts from a blueprint.

Standard 1

Interpret welding symbols information.

Standard 2

Accurately measure and prepare materials for fabrication.

Standard 3

Use correct techniques and equipment to fabricate parts.

Performance Skill

Fabricate parts from a blueprint.

- Interpret welding symbols information.
- Accurately measure and prepare materials for fabrication.
- Use correct techniques and equipment to fabricate parts.

STRAND 3

Students will use the Gas Tungsten Arc Welding (GTAW) process.

Standard 1

Set up for GTAW operations on plain carbon steel.

Standard 2

Make 3F (vertical position-fillet weld) welds on carbon steel.

Standard 3

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

Standard 4

Make 3G (vertical position-groove weld) welds on carbon steel.

Standard 5

Perform GTAW welder performance qualification test on carbon steel.

Performance Skill

Use the Gas Tungsten Arc Welding (GTAW) process.

- Set up for GTAW operations on plain carbon steel.
- Make 3F (vertical position-fillet weld) welds on carbon steel.
- Make 2G (horizontal position-groove weld) welds on carbon steel.
- Make 3G (vertical position-groove weld) welds on carbon steel.
- Perform GTAW welder performance qualification test on carbon steel.

STRAND 4

Students will use the Flux Cored Arc Welding (FCAW) process.

Standard 1

Set up for FCAW operations on carbon steel.

Standard 2

Make 3F (vertical position-fillet weld) welds on carbon steel.

Standard 3

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

Standard 4

Make 3G (vertical position-groove weld) welds on carbon steel.

Standard 5

Perform FCAW welder performance qualification test on carbon steel.

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Performance Skill

Use the Flux Cored Arc Welding (FCAW) process.

- Set up for FCAW operations on carbon steel.
- Make 3F (vertical position-fillet weld) welds on carbon steel.
- Make 2G (horizontal position-groove weld) welds on carbon steel.
- Make 3G (vertical position-groove weld) welds on carbon steel.
- Perform FCAW welder performance qualification test on carbon steel.

STRAND 5

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

Standard 1

Set up for SMAW operations on carbon steel.

Standard 2

Make 3F (vertical position-fillet weld, uphill travel) welds on carbon steel.

Standard 3

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

Standard 4

Make 3G (vertical position-groove weld, uphill travel) welds on carbon steel.

Standard 5

Perform SMAW welder performance qualification test on carbon steel.

Performance Skill

Use the Shielded Metal Arc Welding (SMAW) process.

- Set up for SMAW operations on carbon steel.
- Make 3F (vertical position-fillet weld, uphill travel) welds on carbon steel.
- Make 2G (horizontal position-groove weld) welds on carbon steel.
- Make 3G (vertical position-groove weld, uphill travel) welds on carbon steel.
- Perform SMAW welder performance qualification test on carbon steel.

STRAND 6

Students will conduct welding inspection and testing.

Standard 1

Visually examine cut surfaces and edges of prepared base metal parts for appropriate preparation and fit.

Standard 2

Visually examine tacks, root passes, intermediate layers, and completed welds for penetration and porosity, undercut, bead reinforcement, slag inclusions, and overlap.

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Standard 3

Perform bend-testing procedures to determine the quality of the weld.

Standard 4

Take or suggest appropriate corrective action based on testing results.

Performance Skill

Conduct welding inspection and testing.

- Visually examine cut surfaces and edges of prepared base metal parts for appropriate preparation and fit.
- Visually examine tacks, root passes, intermediate layers, and completed welds for penetration and porosity, undercut, bead reinforcement, slag inclusions, and overlap.
- Perform bend-testing procedures to determine the quality of the weld.
- Take or suggest appropriate corrective action based on testing results.

STRAND 7

Students will fabricate projects using metal and welding processes.

Standard 1

Develop a drawing of a project and create a bill of materials with cost estimates.

Standard 2

Prepare a materials order and secure the materials.

Standard 3

Construct the project according to a plan that meets high quality standards in four areas, including project design, quality of workmanship, attention to detail, and fit and finish.

STRAND 8

Students will understand the importance of career readiness skills as it relates to the workplace and outlined in the SkillsUSA Framework – Level 3.

Standard 1

Understand and develop collaboration skills.

- Develop a working relationship with a mentor.
- Apply supervisory skills.
- Manage a project and evaluate others.

Standard 2

Understand and demonstrate change management skills.

- Evaluate your career and training goals.
- Identify and apply conflict resolution skills.
- Illustrate an organizational structure.
- Plan and implement a leadership project.

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Standard 3

Understand how customer service applies to the workplace.

- Serve as a volunteer in the community.
- Examine workplace ethics: the role of values in making decisions.
- Understand the cost of customer service.
- Develop customer service skills.
- Maximize customer service skills.

Standard 4

Understand and demonstrate career readiness.

- Market your career choice.
- Research resume writing.
- Demonstrate interviewing skills.
- Predict employment trends.
- Re-evaluate career goals and establish long-term goals.
- Construct a job search network.
- Evaluate professional competencies.
- Analyze your entry-level job skills.
- Design and present a lesson plan on an aspect of your career choice.
- Write an article for a professional journal in your career area.
- Refine your employment portfolio.

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		
Welding Technician, Advanced	597	10	6	7	6	3	3	6	41	40