



Welding Technician, Entry

EXAM INFORMATION

Items

52

Points

64

Prerequisites

NONE

Grade Level

9-12

Course Length

ONE YEAR

Career ClusterAGRICULTURE, GOOD AND NATURAL
RESOURCESARCHITECTURE AND CONSTRUCTION
MANUFACTURINGSCIENCE, TECHNOLOGY, ENGINEERING
AND MATHEMATICS**Performance Standards**

INCLUDED

Certificate Available

YES

DESCRIPTION

Students will learn basic welding skills that will prepare them to apply technical knowledge and skill in the workplace and in project construction. 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.

EXAM BLUEPRINT

STANDARD**PERCENTAGE OF EXAM**

1- Welding Orientation	5%
2- Safety & First Aid	27%
3- Welding Tools & Equipment	14%
4- Basic Math & Measuring	8%
5- Welding Blueprints	1%
6- Welding Symbols	3%
7- SMAW Process	14%
8- Oxy-fuel Gas Cutting Process	14%
9- GMAW Process	14%



STANDARD 1

STUDENTS WILL UNDERSTAND WELDING ORIENTATION

- Objective 1 Identify welding processes.
- Objective 2 Prepare time or job cards, reports, or records.
- Objective 3 Follow verbal instructions to complete work assignments
- Objective 4 Follow written details to complete work assignments

STANDARD 2

STUDENTS WILL UNDERSTAND AND USE WELDING SAFETY AND FIRST AID

- Objective 1 Complete a student safety pledge (disclosure statement).
- Objective 2 Respond to first aid requirements
- Objective 3 Follow safe practices.
- Objective 4 Perform housekeeping duties.
- Objective 5 Successfully complete safety tests on equipment use.

Standard 2 Performance Evaluation included below (Optional)

STANDARD 3

STUDENTS WILL IDENTIFY WELDING TOOLS AND EQUIPMENT

- Objective 1 Identify basic welding hand tools (e.g., safety glasses, welding helmet, chipping hammer, etc.).
- Objective 2 Identify basic power tools and equipment (e.g., shielded metal arc welder, gas metal arc welder, bench grinder, etc.).

Standard 3 Performance Evaluation included below (Optional)

STANDARD 4

STUDENTS WILL USE BASIC MATH AND MEASURING SKILLS

- Objective 1 Perform basic math conversions from fractions to decimals.
- Objective 2 Read and correctly use a tape measure, rule, and square
- Objective 3 Perform basic layout techniques.

Standard 4 Performance Evaluation included below (Optional)



STANDARD 5

STUDENTS WILL READ AND INTERPRET WELDING BLUEPRINTS

- Objective 1 Apply information found in the information block of the drawing.
- Objective 2 Identify basic views used in blueprints, including assembly, detail, and fit-up drawings.
- Objective 3 Identify common types of lines used in blueprints, including object, hidden, center, and construction lines

Standard 5 Performance Evaluation included below (Optional)

STANDARD 6

STUDENTS WILL IDENTIFY AND APPLY BASIC WELDING SYMBOLS

- Objective 1 Identify and interpret basic welding symbols (e.g., square groove weld, fillet weld, field weld, reference line, etc.).
- Objective 2 Draw welding symbols for given specifications.
- Objective 3 Interpret a welding print and welding procedure specifications

Standard 6 Performance Evaluation included below (Optional)

STANDARD 7

STUDENTS WILL USE THE SHIELDED METAL ARC WELDING (SMAW) PROCESSES

- Objective 1 Set up for SMAW operations on carbon steel.
- Objective 2 Start and restart an arc and run a bead on carbon steel.
- Objective 3 Build a weld pad on carbon steel in the flat position.
- Objective 4 Make 1F (flat position-fillet weld) welds on carbon steel.
- Objective 5 Make 2F (horizontal position-fillet weld) welds on carbon steel.
- Objective 6 Make 1G (flat position-groove weld) welds on carbon steel.
- Objective 7 Make 2G (horizontal position-groove weld) welds on carbon steel.

Standard 7 Performance Evaluation included below (Optional)

STANDARD 8

STUDENTS WILL USE THE MANUAL OXY-FUEL GAS CUTTING PROCESSES

- Objective 1 Perform safety inspections of equipment and accessories.
- Objective 2 Set up for manual oxy-fuel gas cutting operations on carbon steel
- Objective 3 Perform straight cutting operations on carbon steel.
- Objective 4 Perform shape-cutting operations on carbon steel.



- Objective 5 Perform bevel-cutting operations on carbon steel.
- Objective 6 Pierce a hole through a carbon steel plate.

Standard 8 Performance Evaluation included below (Optional)

STANDARD 9

STUDENTS WILL USE THE GAS METAL ARC WELDING (GMAW) PROCESSES

- Objective 1 Set up for GMAW operations on carbon steel.
- Objective 2 Start and restart an arc and backfill at the edge while running a bead on carbon steel.
- Objective 3 Use Short Circuit Transfer welding process to make 1F (flat position-fillet weld) welds on carbon steel.
- Objective 4 Use Short Circuit Transfer welding process to make 2F (horizontal position-fillet weld) welds on carbon steel.
- Objective 5 Use Short Circuit Transfer welding process to make 1F (flat position-fillet weld) multi-pass weld on carbon steel.
- Objective 6 Use Short Circuit Transfer welding process to make 1G (flat position-groove weld) welds on carbon steel.
- Objective 7 Use Short Circuit Transfer welding process to make 2G (horizontal position-groove weld) welds on carbon steel.

Standard 9 Performance Evaluation included below (Optional)



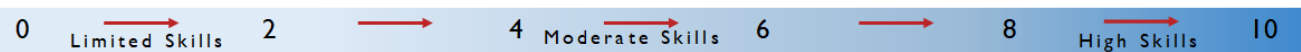
Welding Technician, Entry Performance Standards (Optional)

Performance assessments may be completed and evaluated at any time during the course. The following performance skills are to be used in connection with the associated standards and exam. To pass the performance standard the student must attain a performance standard average of **8 or higher** on the rating scale. Students may be encouraged to repeat the objectives until they average **8 or higher**.

Students Name _____

Class _____

PERFORMANCE RATING SCALE



STANDARD 2 – Safety & First Aid

Score:

- 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.

STANDARD 3 – Welding Tools & Equipment

Score:

- 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.).

STANDARD 4 – Basic Math & Measuring

Score:

- 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.

STANDARD 5 – Welding Blueprints

Score:

- Read and interpret welding blueprints.
 - Apply information found in the information block of the drawing.
 - 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.



STANDARD 6 – Welding Symbols

Score:

- 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.

STANDARD 7 – SMAW Process

Score:

- 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.

STANDARD 8 – Oxy-fuel Gas Cutting Process

Score:

- 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.

STANDARD 9 – GMAW Process

Score:

- 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.

PERFORMANCE STANDARD AVERAGE SCORE: