

Welding Technician I

*This exam is in pilot status for the 20-21 school year. No certificate is available.

EXAM INFORMATION	DESCRIPTION																				
<p>Exam Number 595</p> <p>Items 53</p> <p>Points 58</p> <p>Prerequisites NONE</p> <p>Recommended Course Length ONE YEAR</p> <p>National Career Cluster AGRICULTURE, FOOD & NATURAL RESOURCES ARCHITECTURE & CONSTRUCTION MANUFACTURING</p> <p>Performance Standards INCLUDED (OPTIONAL)</p> <p>Certificate Available No (PILOT)</p>	<p>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.</p> <p>EXAM BLUEPRINT</p> <table border="1"> <thead> <tr> <th>STANDARD</th> <th>PERCENTAGE OF EXAM</th> </tr> </thead> <tbody> <tr> <td>1. Leadership Development</td> <td>2%</td> </tr> <tr> <td>2. Work-place Readiness</td> <td>2%</td> </tr> <tr> <td>3. Welding Processes & Procedures</td> <td>10%</td> </tr> <tr> <td>4. Welding Safety</td> <td>21%</td> </tr> <tr> <td>5. Welding Tools & Equipment</td> <td>14%</td> </tr> <tr> <td>6. Blueprint Identification</td> <td>19%</td> </tr> <tr> <td>7. Shielded Metal Arc Welding (SMAW)</td> <td>10%</td> </tr> <tr> <td>8. Gas Metal Arc Welding (GMAW)</td> <td>9%</td> </tr> <tr> <td>9. Manual Oxy Fuel Process/System</td> <td>14%</td> </tr> </tbody> </table>	STANDARD	PERCENTAGE OF EXAM	1. Leadership Development	2%	2. Work-place Readiness	2%	3. Welding Processes & Procedures	10%	4. Welding Safety	21%	5. Welding Tools & Equipment	14%	6. Blueprint Identification	19%	7. Shielded Metal Arc Welding (SMAW)	10%	8. Gas Metal Arc Welding (GMAW)	9%	9. Manual Oxy Fuel Process/System	14%
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STANDARD 1

Student will participate in personal and leadership development activities through SkillsUSA or another appropriate career and technical student organization

Objective 1 Student will use communication skills to effectively communicate with others.

1. Understand when it is appropriate to listen and to speak.
2. Understand and follow verbal and written instructions for classroom and laboratory activities.

Objective 2 Student will effectively use teamwork to respectfully work with others.

1. Identify and understand different roles in working with a team

Objective 3 Student will use critical thinking and problem-solving skills

1. Analyze the cause of the problem.
2. Develop a solution to address the problem.
3. Implement the plan.
4. Evaluate the effectiveness of the plan.

Objective 4 Student will be dependable, reliable, steady, trustworthy and consistent in performance and behavior.

1. Set and meet goals on attendance and punctuality.
2. Prioritize, plan and manage work to complete assignments and projects on time.

Objective 5 Student will be accountable for results.

1. Use an achievement chart for activities and behaviors in class that encourages a personal evaluation of classroom performance.
2. File a regular written report on progress toward completion of assignments and projects.

Objective 6 Be familiar with the legal requirements and expectations of the course.

1. Be familiar with the course disclosure statement and all requirements for successful completion of the course.
2. Demonstrate workplace ethics, e.g. fair, honest, disciplined.

STANDARD 2

Student will participate in work-place readiness activities

Objective 1 Student will demonstrate employability skills.

1. Use a career search network to find career choices.
2. Write a resume including a list of demonstrated skills.
3. Write a letter of application.
4. Complete a job application.
5. Participate in an actual or simulated job interview.

Objective 2 Student will participate in a work-based learning experience outside the classroom.

1. Student will plan and implement a work-based learning experience aligned with their career goal.

STANDARD 3

Students will understand welding processes and procedures

Objective 1 Identify weld joints, weld types and weld positions.

1. Identify five welding joints; butt, corner, edge, lap and tee.
2. Identify four types of welds; fillet, groove, surfacing, and plug or slot.
3. Identify four welding positions; flat, vertical, horizontal and overhead.

Objective 2 Visually identify common weld defects.

STANDARD 4

Student will demonstrate appropriate welding safety practices for laboratory and work settings

Objective 1 Implement safety practices related to welding.

1. Identify, select, and properly use appropriate personal protective equipment (PPE).

2. Verify that all equipment is in good operating condition and that appropriate safety devices are in place and working (e.g., guards in place, tool rests adjusted, etc.).
3. Maintain a neat, well-organized laboratory or shop working area.

Objective 2 Identify fire hazard conditions and actions to take in case of fire.

1. Explain combustion and identify three conditions necessary for it to occur.
2. Describe fire prevention in a welding shop or work site.
3. Explain classes of fires and appropriate extinguishers.

Objective 3 Take appropriate actions in an accident or emergency.

1. Demonstrate the use of simple first aid in an accident with an injury.
2. Locate first aid kits and investigate their contents and use in appropriate settings.
3. Discuss appropriate safety responses in an accident or emergency.

STANDARD 5

Students will identify welding tools and equipment

Objective 1 Identify and properly use welding tools and equipment.

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

STANDARD 6

Student will identify and use basic layout techniques, welding symbols and drawing symbols identified in blueprints

Objective 1 Use basic math and measuring skills to enhance basic layout techniques.

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

Objective 2 Read and interpret welding blueprints.

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

Objective 3 Identify and apply basic welding symbols.

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

STANDARD 7

Student will use the Shielded Metal Arc Welding (SMAW) process

Objective 1 Set up for SMAW operations on carbon steel.

1. Properly set up welding machine.
2. Start and restart an arc and run a bead on carbon steel.
3. Identify common electrode classifications.

Objective 2 Properly set up and complete fillet and groove welds in the flat and horizontal position with SMAW process.

1. Make 1F (flat position-fillet weld) welds on carbon steel.
2. Make 2F (horizontal position-fillet weld) welds on carbon steel.
3. Make 1G (flat position-groove weld) welds on carbon steel.

STANDARD 8

Student will use the Gas Metal Arc Welding (GMAW) process

Objective 1 Set up for GMAW operations on carbon steel.

1. Properly set up welding machine.
2. Start and restart an arc and run a bead on carbon steel.
3. Identify common electrode classifications.

Objective 2 Properly set up and complete fillet and groove welds in the flat and horizontal position with GMAW process.

1. Use Short Circuit Transfer welding process to make 1F (flat position-fillet weld) welds on carbon steel.
2. Use Short Circuit Transfer welding process to make 2F (horizontal position-fillet weld) welds on carbon steel.
3. Use Short Circuit Transfer welding process to make 1F (flat position-fillet weld) multi-pass weld on carbon steel.
4. Use Short Circuit Transfer welding process to make 1G (flat position-groove weld) welds on carbon steel.

STANDARD 9

Students will use a manual oxy fuel process/system

Objective 1 Set up and safely use a manual oxy fuel system to cut metal.

1. Perform safety inspections of equipment and accessories.
2. Set up for manual oxyfuel gas cutting operations on carbon steel.

Objective 2 Perform oxy fuel cutting operations on carbon steel.

1. Perform straight cutting operations on carbon steel.
2. Perform shape-cutting operations on carbon steel.
3. Perform bevel-cutting operations on carbon steel.
4. Pierce a hole through a carbon steel plate.

Welding Technician I

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.

Student's Name: _____

Class: _____

PERFORMANCE STANDARDS RATING SCALE



- File a regular written report on progress toward completion of assignments and projects.
- Student will plan and implement a work-based learning experience aligned with their career goal.
- Implement safety practices related to welding.
- Interpret a welding blueprint and welding procedure specifications.
- Use the SMAW process to make 1G (horizontal position-groove weld) welds on carbon steel.
- Use the GMAW Short Circuit Transfer welding process to make 1G (horizontal position-groove weld) welds on carbon steel.
- Perform oxyfuel cutting operations on carbon steel.

PERFORMANCE STANDARD AVERAGE SCORE:

Evaluator Name: _____

Evaluator Title: _____

Evaluator Signature: _____

Date: _____