

Student Name: _____

Date: _____

PROGRAM COMPETENCY PROFILE FOR CAREER TECHNICAL EDUCATION
Career Cluster: Manufacturing

Program Name: Welding Technology/Welder CIP: 48050

Effective 08/2018

National Standard: American Welding Society

Competencies (statement that provides the overview of instructional area) Learner can:	Performance Indicators (examples of what educators may see in performance tasks when learners demonstrate their increasing understanding and use of the competencies) Learner can:	Rating Scale: (1) No Exposure (2) Novice (3) Proficient (4) Mastery				
1. Understand and demonstrate proper safety practices and procedures to provide a safe work environment. ELA:2,3,6,7,8,9 M:2	<ul style="list-style-type: none"> • Understand the safety practices within the work environment by: <ul style="list-style-type: none"> ○ <i>Interpreting and complying with Safety Data Sheets and explaining and interpreting information on labels and signs;</i> ○ <i>Identifying the purpose and demonstrating the proper use and fit of personal protective equipment (PPE);</i> ○ <i>Explaining the potential hazards associated with welding and cutting jobs, and explaining how to mitigate danger to oneself and coworkers;</i> ○ <i>Recognizing hazards associated with oxy-acetylene welding equipment (i.e., transport and storage of tanks, hoses, gauges) and taking the necessary measures to avoid unintentional injuries, including those caused by flashback and backfire;</i> ○ <i>Demonstrating correct rigging practices;</i> ○ <i>Obtaining CPR/AED and First Aid training; and</i> ○ <i>Completing OSHA 10 certification.</i> 	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 25%;">1</td> <td style="width: 25%;">2</td> <td style="width: 25%;">3</td> <td style="width: 25%;">4</td> </tr> </table>	1	2	3	4
1	2	3	4			

Key: Rating Scale: 1 NO EXPOSURE; 2 = NOVICE (Information was covered in class, but student cannot demonstrate skill or knowledge without significant supervision); 3 = PROFICIENT (Student regularly demonstrates the knowledge or skill); 4= MASTERY (Student demonstrates successful completion of this skill numerous times without supervision.)

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All Aspect Industry (AAI) Career Ready Practice (CRP)

2. Understand proper use of tools and equipment, and preventative maintenance practices. ELA:2,4,6,7,9 M:2,5,7	<ul style="list-style-type: none"> • Demonstrate the proper use (including set-up, operation, safety assessments, & maintenance) of: <ul style="list-style-type: none"> ○ <i>Tools and power equipment;</i> ○ <i>Portable and fixed power tools/equipment;</i> ○ <i>Welding equipment;</i> ○ <i>Materials storage; and</i> ○ <i>Lock out tag out procedures</i> 	1	2	3	4
	<ul style="list-style-type: none"> • Identify various metals and alloys used in welding and cutting jobs. 	1	2	3	4
	<ul style="list-style-type: none"> • Use measuring devices and gauges to determine dimensions for welding and cutting jobs. 	1	2	3	4
	<ul style="list-style-type: none"> • Prepare materials for welding. 	1	2	3	4
	<ul style="list-style-type: none"> • Describe the properties and classification of welding consumables (electrodes, filler metal and base metal classifications, etc.). 	1	2	3	4
<i>Set-up</i>	<ul style="list-style-type: none"> • Set-up welding equipment in accordance with the manufacturer's specifications. 	1	2	3	4
	<ul style="list-style-type: none"> • Select appropriate tools and materials for welding and cutting jobs. 	1	2	3	4
	<ul style="list-style-type: none"> • Demonstrate grinding, beveling, and other techniques to ensure metals fit together. 	1	2	3	4

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<p>3. Understand the use and operation of equipment, their necessary performance, and be able to explain how they are critical to the integrity of the weld.</p> <p><i>SMAW (STICK)</i> <i>GMAW(MIG)</i> <i>FCAW</i> <i>GTAW(TIG)</i> ELA:2,6,7,8,9 M:1,2,4,5,6,7</p>	<ul style="list-style-type: none"> • Apply the knowledge and understanding of welding by: <ul style="list-style-type: none"> ○ <i>Describing the various welding processes commonly used in industry;</i> ○ <i>Describing the techniques available for the joining of materials by welding;</i> ○ <i>Understanding basic welding metallurgy; and</i> ○ <i>Describing various methods for testing welds and welders.</i> 	1	2	3	4
	<ul style="list-style-type: none"> • Select the required welding process as nominated on the drawings. 	1	2	3	4
	<ul style="list-style-type: none"> • Set and adjust welding parameters as required, including (but not limited to): <ul style="list-style-type: none"> ○ <i>Welding polarity</i> ○ <i>Welding amperage</i> ○ <i>Welding voltage</i> ○ <i>Wire feed speed</i> ○ <i>Travel speed</i> ○ <i>Torch/electrode angles</i> ○ <i>Mode of metal transfer</i> ○ <i>Selection of proper shielding gases</i> 	1	2	3	4
	<ul style="list-style-type: none"> • Perform welding in all positions for all nominated processes. 	1	2	3	4
	<ul style="list-style-type: none"> • Weld steel plate utilizing the Manual Metal Arc Welding process. 	1	2	3	4
	<ul style="list-style-type: none"> • Weld steel plate utilizing the Gas Metal Arc Welding process. 	1	2	3	4
	<ul style="list-style-type: none"> • Weld steel plate utilizing the Flux Cored Arc Welding process. 	1	2	3	4
<ul style="list-style-type: none"> • Weld steel plate utilizing the Gas Tungsten Arc Welding. 	1	2	3	4	

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	<ul style="list-style-type: none"> Weld stainless steel utilizing the Gas Tungsten Arc. 	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> </table>	1	2	3	4
1	2	3	4			
	<ul style="list-style-type: none"> Weld aluminum sheet utilizing the Gas Tungsten Arc Welding process. 	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> </table>	1	2	3	4
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	<ul style="list-style-type: none"> Clean welds utilizing wire brushes, chisels, scrapers, etc. 	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> </table>	1	2	3	4
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	<ul style="list-style-type: none"> Demonstrate use of arc welder to complete simple tack and bead welds. 	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> </table>	1	2	3	4
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	<ul style="list-style-type: none"> Use grinder and other hand and power tools required to grind, bevel, fit metals together, and remove slag. 	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> </table>	1	2	3	4
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	<ul style="list-style-type: none"> Demonstrate knowledge of inspection principles and practices. 	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> </table>	1	2	3	4
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	<ul style="list-style-type: none"> Exposure to the proper procedures for up hand and down hand pipe welding, having observed demonstrations of both. 	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> </table>	1	2	3	4
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<p>4. Understand the use of thermal cutting equipment and processes in order to obtain a quality cut. <i>Oxy-fuel Welding & Cutting</i> <i>Plasma Arc</i> ELA:2,6,7,8,9 M:2,3,5</p>	<ul style="list-style-type: none"> Demonstrate the use of an oxy-acetylene torch to cut materials. <ul style="list-style-type: none"> <i>Including lighting, adjusting, and extinguishing an oxy-fuel flare</i> 	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> </table>	1	2	3	4
	1	2	3	4		
	<ul style="list-style-type: none"> Demonstrate the use of a plasma-arc torch to cut materials. 	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> </table>	1	2	3	4
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<ul style="list-style-type: none"> Demonstrate and set up straight line cuts and weld gouging. 	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> </table>	1	2	3	4	
1	2	3	4			
<p>5. Demonstrate an understanding of the integration of academic knowledge and technical skills used in the workplace. <i>Communication</i> <i>Problem Solving</i> <i>Critical Thinking</i></p>	<ul style="list-style-type: none"> Use oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. <ul style="list-style-type: none"> <i>Read and demonstrate comprehension of written directions, including work orders and procedures.</i> <i>Demonstrate comprehension of verbal instructions and ask clarifying questions as needed.</i> 	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> </table>	1	2	3	4
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<p><i>Teamwork</i> <i>Effective Relationships</i></p> <p>ELA:2,4,7,8,9 M:2,4,5,6, 7</p>	<ul style="list-style-type: none"> • Read and layout drawing measurements using various scales (architect’s, metric). 	1	2	3	4
	<ul style="list-style-type: none"> • Fabricate parts from a drawing or sketch. 	1	2	3	4
	<ul style="list-style-type: none"> • Interpret blueprints and welding symbols. 	1	2	3	4
	<ul style="list-style-type: none"> • Work within a team based environment to accomplish all aspects of welding and fabrication. 	1	2	3	4
	<ul style="list-style-type: none"> • Use current technology as required by the industry (CAD). 	1	2	3	4
	<ul style="list-style-type: none"> • Apply mathematical concepts to welding and cutting jobs, including estimation and understanding of fractions and decimals, as they relate to measurement. 	1	2	3	4
<p>6. Demonstrate understanding of the necessary employability and career readiness skills in order to achieve success in today’s workplace. https://www.education.nh.gov/career/career/documents/aai_crp_emp.pdf</p> <p>AAI:1-9 CRP: 1-13 ELA:2,4,6,7,8,9 M:2,3,4</p>	<p>Apply the knowledge, skills and academic preparation to enter into employment or postsecondary education by:</p> <ul style="list-style-type: none"> ○ <i>Identifying post-secondary welding programs apprenticeships, certification programs, and associate’s degree programs.</i> ○ <i>Demonstrating preparedness for AWS and other pre-employment qualifying tests.</i> ○ <i>Applying knowledge of career- planning strategies and skills related to job search and job acquisition (including creation of professional documents and interview skills).</i> 	1	2	3	4

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