

Unit/ Standard Number	<p style="text-align: right;"><u>High School Graduation Years 2022, 2023, 2024 and 2025</u></p> <p style="text-align: center;"><b>Welding Technology/Welder CIP 48.0508 Task Grid</b></p>	<p style="text-align: center;">Proficiency Level Achieved: (X) Indicates Competency Achieved to Industry Proficiency Level</p>
<b>Secondary Competency Task List</b>		
<b>100</b>	<b>OCCUPATIONAL ORIENTATION AND SAFETY</b>	
101	Complete time or job sheet, reports, or records.	
102	Perform housekeeping duties daily.	
103	Follow verbal instructions to complete work assignments and rules.	
104	Follow written instructions to complete work assignments and rules.	
105	Inspect and use Personal Protection Equipment (PPE) daily.	
106	Maintain proper organization and operation of work area.	
107	Demonstrate proper use of ventilation equipment.	
108	Discuss proper hot work operation.	
109	Demonstrate knowledge of proper work actions for working in confined spaces.	
110	Identify Safety Data Sheets (SDS) and precautionary labeling.	
111	Inspect welding and thermal cutting equipment for safe operation.	
112	Display familiarity with industrial and OSHA safety standards.	
113	Identify oxyfuel safety procedures.	
114	Identify arc welding/cutting safety procedures.	
115	Follow emergency action plan.	
160	Complete general industry OSHA training	
161	Identify and follow the Welding Technology program rules and procedures.	
162	Identify and follow the Middle Bucks Institute of Technology school rules and procedures.	
163	Describe and display positive student/teacher and employer/employee student/worker habits.	
<b>200</b>	<b>PRINCIPLES OF WELDING</b>	
201	Identify major types of metals (ferrous and nonferrous) used in welding.	
202	Describe the basic principles of heat, expansion, and contraction as they relate to metals.	
203	RESERVED	
204	Describe the industry accepted welding codes, standards, and procedures and their use.	
205	Identify various joint designs (joint geometry).	
206	Clean and prepare materials for welding and/or cutting.	
207	Demonstrate proper use of hand tools.	
208	Demonstrate proper use of standard measuring and layout tools.	
209	Demonstrate proper use of power equipment.	
260	Define welding and cutting processes	
261	Explain the physics of welding	

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<b>300</b>	<b>WELDING, DRAWING, AND WELD SYMBOL INTERPRETATION</b>	
301	Interpret basic elements of a drawing or sketch.	
302	Interpret welding symbol information.	
303	Fabricate parts from a drawing or sketch (class project).	
304	Identify structural materials used in the metal fabrication field.	
305	Perform basic metric conversion.	
<b>400</b>	<b>VISUAL EXAMINATION, INSPECTION, AND TESTING</b>	
401	Evaluate cut surfaces and edges of prepared base metal parts for testing.	
402	Identify and evaluate weld discontinuities as per accept/reject criteria.	
403	Perform visual inspection, destructive and non destructive testing.	
<b>500</b>	<b>SHIELDED METAL ARC WELDING (SMAW)</b>	
501	Perform safety inspections of SMAW equipment.	
502	Make minor external repairs to SMAW equipment.	
503	Set up and operate SMAW equipment.	
504	RESERVED	
505	RESERVED	
506	RESERVED	
507	Perform qualification test.	
508	Pass fillet weld performance test in flat position.	
509	Pass fillet weld performance test in horizontal position.	
510	Pass fillet weld performance test in vertical position.	
511	Pass fillet weld performance test in overhead position.	
512	Pass groove weld performance test in flat position.	
513	Pass groove weld performance test in horizontal position.	
514	Pass groove weld performance test in vertical position.	
515	Pass groove weld performance test in overhead position.	
560	Practice 1G and 2G pipe/tube welding	
561	Practice 5G and 6G pipe/tube welding	
<b>600</b>	<b>GAS METAL ARC WELDING (GMAW)</b>	
601	Perform safety inspections of GMAW equipment.	
602	Make minor external repairs to GMAW equipment.	
603	Set up and operate GMAW equipment.	
604	RESERVED	
605	RESERVED	
606	Pass performance test.	
607	Pass fillet weld performance test in flat position.	
608	Pass fillet weld performance test in horizontal position.	
609	Pass fillet weld performance test in vertical position.	
610	Pass fillet weld performance test in overhead position.	
611	Pass groove weld performance test in flat position.	
612	Pass groove weld performance test in horizontal position.	
613	Pass groove weld performance test in vertical position.	

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614	Pass groove weld performance test in overhead position.		
660	Practice 1G and 2G pipe/tube welding		
661	Practice 5G and 6G pipe/tube welding		
<b>700</b>	<b>FLUX CORED ARC WELDING (FCAW)</b>		
701	Perform safety inspections of FCAW equipment.		
702	Make minor external repairs to FCAW equipment.		
703	Set up and operate FCAW equipment.		
704	RESERVED		
705	Pass performance test.		
706	RESERVED		
707	Pass fillet weld performance test in flat position.		
708	Pass fillet weld performance test in horizontal position.		
709	Pass fillet weld performance test in vertical position.		
710	Pass fillet weld performance test in overhead position.		
711	Pass groove weld performance test in flat position.		
712	Pass groove weld performance test in horizontal position.		
713	Pass groove weld performance test in vertical position.		
714	Pass groove weld performance test in overhead position.		
760	Practice 1G and 2G pipe/tube welding		
761	Practice 5G and 6G pipe/tube welding		
<b>800</b>	<b>GAS TUNGSTEN ARC WELDING (GTAW)</b>		
801	Perform safety inspections of GTAW equipment.		
802	Make minor external repairs to GTAW equipment.		
803	Set up and operate GTAW equipment.		
804	RESERVED		
805	Pass performance test on ferrous materials.		
806	Set up and operate GTAW on nonferrous materials.		
807	RESERVED		
808	Pass performance test on nonferrous materials.		
809	Pass fillet weld performance test in flat position on ferrous materials.		
810	Pass fillet weld performance test in horizontal position on ferrous materials.		
811	Pass fillet weld performance test in vertical position on ferrous materials.		
812	Pass fillet weld performance test in overhead position on ferrous materials.		
813	Pass fillet weld performance test in flat position on nonferrous materials.		
814	Pass fillet weld performance test in horizontal position on nonferrous materials.		
815	Pass fillet weld performance test in vertical position on nonferrous materials.		
816	Pass fillet weld performance test in overhead position on nonferrous materials.		
860	Make groove welds on ferrous and non-ferrous metals in all positions.		
861	Practice 1G and 2G pipe/tube welding		
862	Practice 5G and 6G pipe/tube welding		
<b>900</b>	<b>MANUAL OXYFUEL GAS CUTTING (OFC)</b>		
901	Perform safety inspections of OFC equipment.		
902	Make minor external repairs to OFC equipment.		

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903	Set up for manual OFC operations on steel.	
904	Operate manual OFC equipment.	
905	Perform straight cutting operations on steel.	
906	Perform shape cutting operations on steel.	
907	Perform bevel cutting operations on steel.	
908	Perform piercing operations on steel.	
960	Identify gas welding equipment and supplies	
<b>1000</b>	<b>MECHANIZED OXYFUEL GAS CUTTING (OFC)</b>	
1001	Perform safety inspections of mechanized OFC equipment.	
1002	Make minor external repairs to mechanized OFC equipment.	
1003	Set up and operate mechanized OFC equipment on steel.	
1004	Perform straight mechanized OFC operations on steel.	
1005	Perform bevel mechanized OFC operations on steel.	

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<b>1100</b>	<b>MANUAL PLASMA ARC CUTTING (PAC)</b>	
1101	Perform safety inspections of PAC equipment.	
1102	Make minor external repairs to PAC equipment.	
1103	Set up and operate manual PAC operations on ferrous and nonferrous materials.	
1104	Perform shape PAC operations on ferrous and nonferrous materials.	
1105	Perform gouging and scarfing PAC operations to remove base and weld metal on ferrous and nonferrous materials.	
<b>1200</b>	<b>MANUAL AIR CARBON ARC CUTTING (CAC-A)</b>	
1201	Perform safety inspections of CAC-A equipment and accessories.	
1202	Make minor external repairs to CAC-A equipment and accessories.	
1203	Set up and operate manual CAC-A gouging and cutting operations on steel.	
1204	Perform gouging and scarfing operations, to remove base and weld metal, on steel.	
<b>1300</b>	<b>RESERVED</b>	
1301	RESERVED	
1302	RESERVED	
1360	Oxyfuel weld mild steel	
<b>3000</b>	<b>METAL FABRICATION</b>	
3060	Demonstrate knowledge of Plate shear safety procedures.	
3061	Perform safety inspections of Plate shear equipment	
3062	Set up and operate Plate Shear equipment.	
3063	Demonstrate knowledge of CNC Brake safety procedures.	
3064	Perform safety inspections of CNC Brake equipment and accessories.	
3065	Set up and operate CNC Brake equipment.	
3066	Demonstrate knowledge of Ironworker safety procedures.	
3067	Perform safety inspections of Ironworker equipment.	
3068	Notching/fitment of various types, shapes, and sizes of different metals.	
3069	Demonstrate knowledge of Horizontal Band Saw safety procedures.	
3070	Perform safety inspections of Horizontal Band Saw equipment	
3071	Set up and operate Horizontal Band Saw equipment.	
<b>3200</b>	<b>MATHEMATICAL CALCULATIONS</b>	
3260	Add, subtract, multiply, and divide whole numbers.	
3261	Add, subtract, multiply, and divide decimals and mixed numbers.	
3262	Demonstrate the ability to solve trade related problems.	
3263	Demonstrate the ability to calculate linear, angular, circular, and square measure.	
<b>3300</b>	<b>AUTOMATED PLASMA ARC CUTTING (PAC-A)</b>	
3360	Perform safety inspection of PAC (CNC) automated equipment.	
3361	Make minor external repairs to PAC (CNC) automated equipment and accessories.	
3362	Set up and operate automatic PAC (CNC) operations on ferrous and non-ferrous materials.	
3363	Perform shape cutting operations on ferrous and non-ferrous materials.	