



(Welding/Fabrication)

**Program of Study Scope & Sequence
with
Certification Outcomes**

(48.0508)

Task #	Task Description	Level/ Marking Pd	Career Path CIP/Soc			Certification to test for
			4ccc8.0508/ 51-2041 Structural Metal Fabricators and Fitters			(AWS D1.1)
PA100	Occupational Orientation and Safety	1.1-2.1-3.1	x			
PA101	Complete time or job sheet, reports, or records.	YEAR 1-2-3	x			
PA102	Perform housekeeping duties daily.	YEAR 1-2-3	x			
PA103	Follow verbal instructions to complete work assignments and rules.	YEAR 1-2-3	x			
PA104	Follow written instructions to complete work assignments and rules.	YEAR 1-2-3	x			
PA105	Inspect and use Personal Protection Equipment (PPE) daily.	YEAR 1-2-3	x			

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PA106	Maintain proper organization and operation of the work area.	YEAR 1-2-3	x			
PA107	Demonstrate proper use of ventilation equipment.	YEAR 1-2-3	x			
PA108	Discuss proper hot work operation.	1.1	x			
PA109	Demonstrate knowledge of proper work actions for working in confined spaces.	1.1	x			
PA110	Identify Safety Data Sheets (SDS) and precautionary labeling.	1.1	x			
PA111	Inspect welding and thermal cutting equipment for safe operation.	1.3	x			
PA112	Display familiarity with industrial and OSHA safety standards.	1.1	x			
PA113	Identify oxyfuel safety procedures.	1.3	x			
PA114	Identify arc welding/cutting safety procedures.	1.1	x			
PA115	Follow emergency action plan.	YEAR 1-2-3	x			
PA200	Principles of Welding	YEAR 1-2-3	x			
PA201	Identify major types of metals (ferrous and nonferrous)	1.3	x			

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	used in welding.					
PA202	Describe the basic principles of heat, expansion, and contraction as they relate to metals.	YEAR 1-2-3	x			
PA203	RESERVED		x			
PA204	Describe the industry accepted welding codes, standards, and procedures and their use.	1.1	x			
PA205	Identify various joint designs (joint geometry).	1.2-1.2-1.3-1.4	x			
PA206	Clean and prepare materials for welding and/or cutting.	1.2-1.2-1.3-1.4	x			
PA207	Demonstrate proper use of hand tools.	1.2-1.2-1.3-1.4	x			
PA208	Demonstrate proper use of standard measuring and layout tools.	1.2-1.2-1.3-1.4	x			
PA209	Demonstrate proper use of power equipment.	1.2-1.2-1.3-1.4	x			
PA300	Welding, Drawing, and Weld Symbol Interpretation	YEAR 1-2-3	x			
PA301	Interpret basic elements of a drawing or sketch.	1.11.21.31.4 2.12.22.32.4 3.13.23.33.4	x			

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PA302	Interpret welding symbol information.	1.3 3.1-3.2-3,3- 3,4	x			
PA303	Fabricate parts from a drawing or sketch (class project).	1.11.21.31.4 2.12.22.32.4 3.13.23.33.4	x			
PA304	Identify structural materials used in the metal fabrication field.	1.11.21.31.4 2.12.22.32.4 3.13.23.33.4	x			
PA305	Perform basic metric conversion.	3.1-3.2-3,3- 3.4	x			
PA400	Visual Examination, Inspection, and Testing	1.4- 2.23.13.23.3	x			
PA401	Evaluate cut surfaces and edges of prepared base metal parts for testing.	1.3- 3.13.23.3	x			
PA402	Identify and evaluate weld discontinuities as per accept/reject criteria.	1.2	x			
PA403	Perform visual inspection, destructive, and non-destructive testing.	1.3	x			
PA500	Shielded Metal Arc Welding (SMAW)	1.1-1.2-1.3- 1.4	x			
PA501	Perform safety inspections of SMAW equipment.	1.2-1.2	x			

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PA502	Make minor external repairs to SMAW equipment.	1.1-1.2	x			
PA503	Set up and operate SMAW equipment.	1.1	x			
PA504	RESERVED		x			
PA505	RESERVED		x			
PA506	RESERVED		x			
PA507	Perform a qualification test.	1.1-1.2-1.3- 1.4	x			
PA508	Pass fillet weld performance test in flat position.	1.1-1.2-1.3- 1.4	x			
PA509	Pass fillet weld performance test in horizontal position.	1.1-1.2-1.3- 1.4	x			
PA510	Pass fillet weld performance test in vertical position.	1.1-1.2-1.3- 1.4	x			
PA511	Pass fillet weld performance test in overhead position.	1.1-1.2-1.3- 1.4	x			
PA512	Pass groove weld performance test in flat position.	1.1-1.2-1.3- 1.4	x			X per student ability
PA513	Pass groove weld performance test in horizontal position.	1.1-1.2-1.3- 1.4	x			X per student ability

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PA514	Pass groove weld performance test in vertical position.	1.1-1.2-1.3-1.4	x			X per student ability
PA515	Pass groove weld performance test in overhead position.	1.1-1.2-1.3-1.4	x			X per student ability
PA600	Gas Metal Arc Welding (GMAW)	YEAR 2	x			
PA601	Perform safety inspections of GMAW equipment.	YEAR 2	x			
PA602	Make minor external repairs to GMAW equipment.	YEAR 2	x			
PA603	Set up and operate GMAW equipment.	YEAR 2	x			
PA604	RESERVED					
PA605	RESERVED					
PA606	Pass performance test.	YEAR 2	x			
PA607	Pass fillet weld performance test in flat position.	YEAR 2	x			
PA608	Pass fillet weld performance test in horizontal position.	YEAR 2	x			
PA609	Pass fillet weld performance test in vertical position.	YEAR 2	x			
PA610	Pass fillet weld performance test in overhead position.	YEAR 2	x			
PA611	Pass groove weld performance test in flat position.	YEAR 2	x			X per student

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						ability
PA612	Pass groove weld performance test in horizontal position.	YEAR 2	x			X per student ability
PA613	Pass groove weld performance test in vertical position.	YEAR 2	x			X per student ability
PA614	Pass groove weld performance test in overhead position.	YEAR 2	x			X per student ability
PA700	Flux Cored Arc Welding (FCAW)	YEAR 2	x			
PA701	Perform safety inspections of FCAW equipment.	YEAR 2	x			
PA702	Make minor external repairs to FCAW equipment.	YEAR 2	x			
PA703	Set up and operate FCAW equipment.	YEAR 2	x			
PA704	RESERVED					
PA705	Pass performance test.					
PA706	RESERVED					
PA707	Pass fillet weld performance test in flat position.	YEAR 2	x			
PA708	Pass fillet weld performance test in horizontal position.	YEAR 2	x			
PA709	Pass fillet weld performance test in vertical position.	YEAR 2	x			x

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PA710	Pass fillet weld performance test in overhead position.	YEAR 2	x			
PA711	Pass groove weld performance test in flat position.	YEAR 2	x			X per student ability
PA712	Pass groove weld performance test in horizontal position.	YEAR 2	x			X per student ability
PA713	Pass groove weld performance test in vertical position.	YEAR 2	x			X per student ability
PA714	Pass groove weld performance test in overhead position.	YEAR 2	x			X per student ability
PA800	Gas Tungsten Arc Welding (GTAW)	3.1	x			
PA801	Perform safety inspections of GTAW equipment.	3.1	x			
PA802	Make minor external repairs to GTAW equipment.	3.1	x			
PA803	Set up and operate GTAW equipment.	3.1	x			
PA804	RESERVED					
PA805	Pass performance test on ferrous materials.	3.1	x			
PA806	Set up and operate GTAW on nonferrous materials.	3.1	x			
PA807	RESERVED					

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PA808	Pass performance test on nonferrous materials.	3.1	x			
PA809	Pass fillet weld performance test in flat position on ferrous materials.	3.1	x			
PA810	Pass fillet weld performance test in horizontal position on ferrous materials.	3.1	x			
PA811	Pass fillet weld performance test in vertical position on ferrous materials.	3.1	x			
PA812	Pass fillet weld performance test in overhead position on ferrous materials.	3.1	x			
PA813	Pass fillet weld performance test in flat position on nonferrous materials.	3.1	x			
PA814	Pass fillet weld performance test in horizontal position on nonferrous materials.	3.1	x			
PA815	Pass fillet weld performance test in vertical position on nonferrous materials.	3.1	x			
PA816	Pass fillet weld performance test in overhead position on nonferrous materials.	3.1	x			
PA900	Manual Oxy-fuel Gas Cutting (OFC)	1.3-1.4	x			
PA901	Perform safety inspections of OFC equipment.	1.3-1.4	x			
PA902	Make minor external repairs to OFC equipment.	1.3-1.4	x			

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PA903	Set up for manual OFC operations on steel.	1.3-1.4	x			
PA904	Operate manual OFC equipment.	1.3-1.4	x			
PA905	Perform straight cutting operations on steel.	1.3-1.4	x			
PA906	Perform shape cutting operations on steel.	1.3-1.4	x			
PA907	Perform bevel cutting operations on steel.	1.3-1.4	x			
PA908	Perform piercing operations on steel.	1.3-1.4	x			
PA1000	Mechanized Oxy-fuel Gas Cutting (OFC)	1.3-1.4	x			
PA1001	Perform safety inspections of mechanized OFC equipment.	1.3-1.4	x			
PA1002	Make minor external repairs to mechanized OFC equipment.	1.3-1.4	x			
PA1003	Set up and operate mechanized OFC equipment on steel.	1.3-1.4	x			
PA1004	Perform straight mechanized OFC operations on steel.	1.3-1.4	x			
PA1005	Perform bevel mechanized OFC operations on steel.	1.3-1.4	x			
PA1100	Manual Plasma Arc Cutting (PAC)	3.3	x			
PA1101	Perform safety inspections of PAC equipment.	3.3	x			

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PA1102	Make minor external repairs to PAC equipment.	3.3	x			
PA1103	Set up and operate manual PAC operations on ferrous and nonferrous materials.	3.3	x			
PA1104	Perform shape PAC operations on ferrous and nonferrous materials.	3.3	x			
PA1105	Perform gouging and scarfing PAC operations to remove base and weld metal on ferrous and nonferrous materials.	3.3	x			
PA1200	Manual Air Carbon Arc Cutting (CAC-A)	3.3	x			
PA1201	Perform safety inspections of CAC-A equipment and accessories.	3.3	x			
PA1202	Make minor external repairs to CAC-A equipment and accessories.	3.3	x			
PA1203	Set up and operate manual CAC-A gouging and cutting operations on steel.	3.3	x			
PA1204	Perform gouging and scarfing operations to remove base and weld metal on steel.	3.3	x			
PA1300	RESERVED					
PA1301	RESERVED					
PA1302	RESERVED					

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<i>*Local Task List</i>						
WC000	WESTMORELAND COUNTY COMMUNITY COLLEGE ARTICULATION REQUIREMENTS					
WC001	Demonstrate knowledge of how Transformer and Inverter Power sources operate (Welding I - WEL125)					
WC002	Demonstrate knowledge of production steel. (Welding II - WEL135)					
WC003	Demonstrate knowledge of the effects of heat on steel. (Welding II - WEL135)					
WC004	Demonstrate knowledge of the effects of cooling rate on metals. (Welding II - WEL135)					
WC005	Demonstrate knowledge of post weld heat treatment processes. (Welding II - WEL135)					
WC006	Demonstrate knowledge of the effect of post weld heat treatment. (Welding II - WEL135)					
WC007	Understand basic shop math, including right angle trigonometry. (Metal Fabrication - WEL221)					