

Western Area Career and Technology Center
Welding Technology Student Manual

Instructor Information

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Unit/ Standard Number	Welding Technology/Welder CIP 48.0508 Task Grid
	Secondary Competency Task List
100	OCCUPATIONAL ORIENTATION AND SAFETY
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	Demonstrate knowledge of SDS sheets 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	Demonstrate emergency action plan
200	PRINCIPLES OF WELDING
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.

300	WELDING, DRAWING, AND WELD SYMBOL INTERPRETATION
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.
400	VISUAL EXAMINATION, INSPECTION, AND TESTING
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.
500	SHIELDED METAL ARC WELDING (SMAW)
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.
600	GAS METAL ARC WELDING (GMAW)
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.
614	Pass groove weld performance test in overhead position.
700	FLUX CORED ARC WELDING (FCAW)
701	Perform safety inspections of Flux Cored Arc equipment.
702	Make minor external repairs to Flux Cored Arc 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.
800	Gas Tungsten Arc Welding (GTAW)
801	Perform safety inspections of GTAW Arc equipment.
802	Make minor external repairs to GTAW Arc 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.
900	MANUAL OXYFUEL GAS CUTTING (OFC)
901	Perform safety inspections of OFC equipment.
902	Make minor external repairs to OFC equipment.
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.
1000	MECHANIZED OXYFUEL GAS CUTTING (OFC)
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.
1100	MANUAL PLASMA ARC CUTTING (PAC)
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.
1200	MANUAL AIR CARBON ARC CUTTING (CAC-A)
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.
1300	Reserved
1301	Reserved
1302	Reserved

Name: _____ Year: _____

Student Check Sheet

Process	1-Flat	2-Horizontal	3-Vertical	4-Overhead
Surfacing 7018 1/8"				
Surfacing 7018 3/32"				
Surfacing 6010 1/8"				
Surfacing 6010 3/32"				
Surfacing 6013 1/8"				
	1F	2F	3F	4F
T-Joint 7018 1/8"				
T-Joint 7018 3/32"				
T-Joint 6010 1/8"				
T-Joint 6010 3/32"				
T-Joint 6013 1/8"				
	Set-Up	Freehand Cut	Freehand Bevel	Track Burner
OAC				
PAC				
CAC				
	1G	2G	3G	4G
V-Groove 7018 1/8" W/Backing				
V-Groove 7018 3/32" W/Backing				
V-Groove Open Root 6010 + 7018				

Pipe	1G	2G	5G	6G
6010 + 7018				
6010 DH				
GTAW + SMAW				
GMAW DH				
	1-Flat	2-Horizontal	3-Vertical	4-Overhead
GTAW Surfacing Steel				
GTAW Surfacing Aluminum				
GTAW Surfacing Stainless				
GTAW T-Joint Steel				
GTAW T-Joint Aluminum				
GTAW T-Joint Stainless				
GTAW Lap Steel				
GTAW Lap Aluminum				
GTAW Lap Stainless				

GMAW Surfacing				
GMAW T-Joint				
GMAW W/Backing				
GMAW Open- root				
FCAW Surfacing				
FCAW T-Joint				
FCAW W/Backing				
Brazing				
Soldering				

Projects / Unlisted Processes

<i>Process Used</i>	<i>Description</i>

Weld Shop Rules

- 1.) All P.P.E must be worn in the lab at all times
 - Safety glasses
 - Safety toe boots
 - Welding coats
 - Shop Uniform
 - Pants free from rips and frays
- 2.) Horseplay, practical jokes, bullying, yelling & cursing will not be tolerated.
- 3.) Cellphones, headphones, iPod, or music is prohibited in the shop and must be placed into locker.
- 4.) Students are required to clean at the end of every class.
 - Replace all unused electrodes in rod oven
 - Tools returned to the tool box
 - Spent rods in rod can
 - Scrap metal in metal dumpster.
- 5.) Safety Cutting shields, gloves & long sleeve shirts/welding coats required when using manual/mechanized cutting device. (OFC, PAC, CAC-A)
- 6.) Treat all metal as if it was **hot**. Do not pick up hot metal with gloves, use pliers.
- 7.) Operate only the machinery and tools that you were given proper instruction and testing.
- 8.) Report all accidents/injuries to the instructor immediately.
- 9.) Report all damaged tools and equipment to the instructor.
- 10.) Electrodes are not permitted to be left in the stinger when not in use.
- 11.) Welding Electrodes shall not be burnt off on tables.
- 12.) New material is not scrap.
- 13.) Drinks, food, and flammable material are strictly prohibited in the shop.
- 14.) Place refuse/garbage in proper containers.

Signature Page

Your signature serves as a formal agreement between you and instructor. By signing this paper the student is agreeing they have read, understand, and will adhere to the shop safety rules.

Print Name _____ Date _____

Signature _____

Daily Grade Scoring Rubric

CATEGORY	4	3	2	1
ATTITUDE	• Safe and high level of cooperation • Attitude very positive toward task • Works without direction and completes task at hand • Group work effort enhanced by presence	• Safe and somewhat cooperative • Positive attitude toward task • Works with minimal direction and completes task at hand • Group work effort somewhat enhanced by presence	• Safe but less than cooperative • Attitude not positive toward task • Requires direction to complete task at hand • Group work effort adversely effected by presence	• Unsafe and uncooperative • Negative attitude • Requires constant direction and attention • Does not complete tasks • Disruptive and interferes with group work effort
PROFESSIONALISM	• Dresses neatly and appropriately • Excellent communication; uses appropriate language • Assists other students and provides leadership • Exceeds expected effort	• Dresses somewhat appropriately • Good communication; language somewhat appropriate • Contributes to the effectiveness of the group • Contributes expected effort	• Dresses acceptably • Average communication; language less than appropriate • Contributes little during group activities • Less than expected work effort	• Unsafe and inappropriate dress • Poor communication; language inappropriate • Does not contribute to the effectiveness of the group • Little or no effort displayed
WORK ETHIC	• Punctual and on time • Focuses upon task • Self-motivated • Responsible and reliable • Self-directed	• Somewhat punctual and timely • Focuses upon task most of class time • Displays some motivation • Somewhat responsible and reliable • Requires minimal direction	• Less than punctual and delays starting assignments • Requires monitoring to remain on task • Displays some motivation • Displays low levels of responsibility and reliability • Participates when personally interested	• Not punctual and must be reminded to begin assignments • Difficult to keep on task • Displays little motivation • Not responsible and unreliable • No participation
WORK PERFORMANCE	• Demonstrates best effort • Excellent use of time • Well-prepared • Excellent quality of work • Tasks completed within allotted time • Excellent critical thinking skills	• Demonstrates some effort • Completed task within allotted time • Somewhat prepared • Good quality of work • Displays some critical thinking skills	• Demonstrates little effort • Achieves acceptable level of task completion • Not adequately prepared • Poor quality of work • Poor critical thinking skills	• No effort • Task not completed • Unprepared • Unacceptable quality of work • No display of critical thinking skills

Maximum Scores for Absenteeism

Type Code	Description	Category	Maximum Points Allowed	Make-Up Work Required? (3 Days Maximum)
A	Excused Absence	Excused	12	Yes
E	Home School Excused	Excused	16	Yes
I	In-School Suspension	Other	12	Yes
L	Late	Excused	16	Yes
M	Medical	Excused	Exempt	No
O	Out-of-School Suspension	Unexcused	12	Yes
R	Early Release	Other	16	Yes
T	Tardy	Excused	16	Yes
U	Unexcused Absence	Unexcused	0	Not Permitted
V	Vacation	Excused	12	Yes
X	Teacher Marked Absence	Unexcused	0	Not Permitted

Lockers

- 1.) Students will be assigned a locker with their name attached to it once the student has purchased a lock.
- 2.) Locker must have a school lock on it.
- 3.) No welding rods or materials of any sort are to be in lockers without direct permission from the instructor.
- 4.) Random locker checks for compliance will be exercised during the school year.
- 5.) Appropriate actions will be taken for violations in the locker rooms.

Work Orders and Student Projects

Work orders and student projects will only be granted for students caught up on their classwork and approved by the school director, Mr. Milanovich and Mr. Brosk. All work orders must be filled out before any work can be done.