

## Idaho Professional-Technical Education

Welding Technology Criticality Survey Results		Nice to Know	Need to Know	Critical to Know	Rating Average	Response Count
<b>CONTENT STANDARD 1: I identify Lab organizations and Safety Procedures</b>						
<b>Performance Standard 1.1: Demonstrate general lab safety rules and procedures</b>						
1.1.1	Describe general shop safety rules and procedures (i.e., safety test)	0	5	19	2.79	24
1.1.2	Describe OSHA in workplace safety	3	11	10	2.29	24
1.1.3	Comply with the required use of safety glasses, ear protection, gloves, and shoes during lab/shop activities (i.e., personal protection equipment – PPE)	0	2	22	2.92	24
1.1.4	Operate lab equipment according to safety guidelines	0	7	17	2.71	24
1.1.5	Identify and use proper lifting procedures and proper use of support equipment (i.e., rigging, chains, straps, cables)	0	6	18	2.75	24
1.1.6	Utilize proper ventilation procedures for working within the lab/shop area	0	10	14	2.58	24
1.1.7	Identify marked safety areas	1	10	13	2.50	24
1.1.8	Identify the location and the types of fire extinguishers and other fire safety equipment; demonstrate knowledge of the procedures for using fire extinguishers and other fire safety equipment	0	8	16	2.67	24
1.1.9	Identify the location and use of eye wash stations	1	8	15	2.58	24
1.1.10	Identify the location of the posted evacuation routes	1	10	13	2.50	24
1.1.11	Identify and wear appropriate clothing for lab/shop activities	1	6	16	2.65	23
1.1.12	Secure hair and jewelry for lab/shop activities	2	9	13	2.46	24
1.1.13	Demonstrate knowledge of the safety aspects of high voltage circuits	2	5	17	2.63	24
1.1.14	Locate and interpret material safety data sheets (MSDS)	4	12	8	2.17	24
1.1.15	Perform housekeeping duties	5	13	6	2.04	24
1.1.16	Follow verbal instructions to complete work assignments	0	14	10	2.42	24
1.1.17	Follow written instructions to complete work assignments	0	14	10	2.42	24
1.1.18	Identify requirements for Hot Work Permits	5	9	10	2.21	24
1.1.19	Identify what constitutes a confined space	5	7	12	2.29	24
<b>Performance Standard 1.2: Identify and utilize proper tools</b>						
1.2.1	Identify hand tools and their appropriate usage	3	14	6	2.13	23
1.2.2	Identify standard and metric designation	9	12	2	1.70	23
1.2.3	Demonstrate safe handling and use of appropriate tools	0	14	9	2.39	23
1.2.4	Demonstrate proper cleaning, storage, and maintenance of tools	4	16	3	1.96	23
<b>Performance Standard 1.3: Identify and utilize power tools and equipment</b>						
1.3.1	Identify power tools and equipment, and their appropriate usage	0	18	6	2.25	24
1.3.2	Demonstrate safe handling and use of appropriate power tools and equipment	0	12	11	2.48	23
1.3.3	Demonstrate proper cleaning, storage, and maintenance of power tools and equipment	4	16	4	2.00	24
<b>CONTENT STANDARD 2: Apply Fundamental; print Reading, Measurement and Layout/Fit-Up Techniques</b>						
<b>Performance Standard 2.1: Demonstrate print reading and sketching practices</b>						
2.1.1	Interpret basic elements of a technical drawing (i.e., title block information, dimensions, line types)	3	14	7	2.17	24
2.1.2	Identify and explain industry standard welding symbols	0	15	9	2.38	24
2.1.3	Prepare a materials list from a technical drawing (i.e., bill of material)	7	15	2	1.79	24
2.1.4	Describe various types of drawings (i.e., part, assembly, pictorial, orthographic, isometric, schematic)	13	11	0	1.46	24
2.1.5	Understand dimensioning, sectional drawings, fasteners, tables, charts, and assembly drawings	5	16	3	1.92	24
2.1.6	Sketch or draw a basic welding drawing	11	12	1	1.58	24
2.1.7	Fabricate parts from a drawing or sketch	0	14	10	2.42	24

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<b>Performance Standard 2.2: Demonstrate measuring and scaling techniques</b>						
2.2.1	Identify industry standard units of measure	3	15	6	2.13	24
2.2.2	Convert between customary (i.e., SAE, Imperial) and metric systems	11	11	2	1.63	24
2.2.3	Measure and calculate size, area, and volume	8	14	2	1.75	24
2.2.4	Determine and apply the equivalence between fractions and decimals	4	16	4	2.00	24
2.2.5	Identify measuring tools	0	18	4	2.18	22
<b>Performance Standard 2.3: Utilize layout principles and practices</b>						
2.3.1	Interpret drawing, sketch or specification information	3	17	4	2.04	24
2.3.2	Prepare work area for layout	2	19	3	2.04	24
2.3.3	Select appropriate materials to complete work assignment	3	13	8	2.21	24
2.3.4	Use layout and marking tools as required	2	18	4	2.08	24
2.3.5	Layout parts using measurement practices	0	19	5	2.21	24
<b>Performance Standard 2.4: Demonstrate preparation and fit-up practices</b>						
2.4.1	Identify and explain job specifications	3	16	5	2.08	24
2.4.2	Use fit-up gauges and measuring devices to check joint fit-up	4	15	5	2.04	24
2.4.3	Identify and explain distortion and how it is controlled	4	17	3	1.96	24
2.4.4	Fit-up joints using plate and pipe fit-up tools	4	17	3	1.96	24
2.4.5	Check for joint misalignment and poor fit-up before and after welding	3	14	7	2.17	24
<b>CONTENT STANDARD 3: I identify Properties of Metals</b>						
<b>Performance Standard 3.1: Identify material properties and science</b>						
3.1.1	Identify the difference between ferrous and non-ferrous metals	1	17	6	2.21	24
3.1.2	Identify and explain forms and shapes of structural metals	5	14	5	2.00	24
3.1.3	Explain AWS filler metal classifications systems	8	12	4	1.83	24
3.1.4	Identify different types of filler metals	4	18	2	1.92	24
3.1.5	Explain the storage and control of filler metals	4	18	2	1.92	24
<b>Performance Standard 3.2: Identify filler metals</b>						
3.2.1	Explain AWS filler metal classifications systems	11	10	3	1.67	24
3.2.2	Identify different types of filler metals	5	17	2	1.88	24
3.2.3	Explain the storage and control of filler metals	4	19	1	1.88	24
<b>CONTENT STANDARD 4: Apply Shielded Metal Arc Welding (SMAW) Techniques</b>						
<b>Performance Standard: 4.1: Safety procedures</b>						
4.1.1	Identify and explain different types of welding current and polarity	2	15	6	2.17	23
4.1.2	Perform safety inspections of SMAW equipment and accessories	3	16	4	2.04	23
4.1.3	Maintain SMAW equipment and accessories	3	19	1	1.91	23
<b>Performance Standard 4.2: Produce welds using SMAW on carbon steel</b>						
4.2.1	Set up for SMAW operations	5	15	3	1.91	23
4.2.2	Operate SMAW equipment	4	16	3	1.96	23
4.2.3	Perform welds in the 1F position	5	14	4	1.96	23
4.2.4	Perform welds in the 2F position	4	15	4	2.00	23
4.2.5	Perform welds in the 3F position	5	15	3	1.91	23
4.2.6	Perform welds in the 4F position	6	14	3	1.87	23
4.2.7	Perform welds in the 1G position	5	14	4	1.96	23
4.2.8	Perform welds in the 2G position	4	15	4	2.00	23
4.2.9	Perform welds in the 3G position	5	15	3	1.91	23
4.2.10	Perform welds in the 4G position	6	14	3	1.87	23
4.2.11	Describe 2G, 5G and 6G welding positions	6	14	3	1.87	23
<b>CONTENT STANDARD 5: Apply Gas Metal Arc Welding (GMAW-S, GMAW) Techniques</b>						

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<b>Performance Standard 5.1: Utilize safety procedures</b>						
5.1.1	Identify and explain the use of GMAW equipment (i.e., spray transfer, globular, short circuit, pulse)	5	13	5	2.00	23
5.1.2	Perform safety inspections of GMAW equipment and accessories	5	14	4	1.96	23
5.1.3	Maintain GMAW equipment and accessories	2	18	3	2.04	23
5.1.4	Demonstrate safe startup, shutdown, disassembly, and cylinder exchange procedures of GMAW equipment	1	15	7	2.26	23
<b>Performance Standard 5.2: Produce welds using GMAW-S on carbon steel</b>						
5.2.1	Set up for GMAW-S operations	4	11	8	2.17	23
5.2.2	Operate GMAW-S equipment	2	13	8	2.26	23
5.2.3	Perform welds in the 1F position	4	10	9	2.22	23
5.2.4	Perform welds in the 2F position	3	11	9	2.26	23
5.2.5	Perform welds in the 3F position	4	11	8	2.17	23
5.2.6	Perform welds in the 4F position	4	12	7	2.13	23
5.2.7	Perform welds in the 1G position	4	10	9	2.22	23
5.2.8	Perform welds in the 2G position	3	11	9	2.26	23
5.2.9	Perform welds in the 3G position	4	11	8	2.17	23
<b>CONTENT STANDARD 6: Apply Flux Cored Arc Welding (FCAW-G) Technique</b>						
<b>Performance Standard 6.1: Utilize safety procedures</b>						
6.1.1	Identify and explain the use of FCAW-G equipment )	3	17	2	1.95	22
6.1.2	Perform safety inspections of FCAW-G equipment and accessories	3	17	2	1.95	22
6.1.3	Maintain FCAW-G equipment and accessories	2	18	2	2.00	22
6.1.4	Demonstrate safe startup, shutdown, disassembly, and cylinder exchange procedures of FCAW-G equipment	1	15	5	2.19	21
<b>Performance Standard 6.2: Produce welds using FCAW-G on carbon steel</b>						
6.2.1	Set up for FCAW-G operations	4	11	7	2.14	22
6.2.2	Operate FCAW-G equipment	2	13	7	2.23	22
6.2.3	Perform welds in the 1F position	4	11	7	2.14	22
6.2.4	Perform welds in the 2F position	3	12	7	2.18	22
6.2.5	Perform welds in the 3F position	4	11	7	2.14	22
6.2.6	Perform welds in the 4F position	5	11	6	2.05	22
6.2.7	Perform welds in the 1G position	5	10	7	2.09	22
6.2.8	Perform welds in the 2G position	4	11	7	2.14	22
6.2.9	Perform welds in the 3G position	5	11	6	2.05	22