

Welding & Fabrication

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September 2016

Welding and Fabrication

Content	Skills	Learning Targets	Standards	Assessment	Resources & Technology
<p>CEQ: WHAT ARE THE WELDING PROCESSES USED IN THE METALS INDUSTRY?</p> <p>UEQ: <i>•What is this course about and what is expected of students?</i></p> <p>A. Course Introduction A1. Class Outline A2. Grading procedure A3. Metals impact on industry</p>  <p>UEQ: <i>•What is Metal?</i></p> <p>B. Metal B1. Ferrous B2. Non-ferrous B3. Precious</p>	<p>A. Course Introduction A1-A2. Identify course content and grading. A3. Identify how welding impacts the manufacturing industry</p> <p>B. Metal B1-B3. Identify metal samples B1-B3. Identify properties associated with each family of metals.</p>	<p>A. Course Introduction A1-A2. I can recall from my notebook all course content and grading procedure. A3. I can list 3 ways welding impacts industry</p> <p>B. Metal B1-B3. I can identify 5 different metal samples. B1-B3. I can describe and list 3 major properties of different metals.</p>		<p>A. Course Introduction AA1-A2. Guided class discussion with observer notes. A3. Each student will list 3 examples of how metals impact our lives.</p>	<p>A. Course Introduction</p> <p>B. Metal Video "Heavy Metals" History channel production Text reading</p> <p>C. Working drawing</p>

<p>E. Welding and Cutting E1. Advantages E2. Processes E3. AWS E4. Operations E5. Safe Operation </p> <p>UEQ: What is oxy-acetylene welding and cutting ? F. Oxy-Acetylene welding F1. Safety F2. Setup F3. Weld technique </p>	<p>E. Welding and Cutting. E1. Cite the advantages of welding over other joining methods. E2. Name and Identify various welding and cutting processes currently used in industry and in our shop. E3. Recognize the American Welding Society (AWS) abbreviation for each of the welding and cutting processes currently in use in the industry. E4. Describe the operation of each welding and cutting process.</p> <p>F. Oxy-Acetylene welding F1. Demonstrate the ability to safely set up and shut</p>	<p>E. Welding and Cutting E1. I can list 5 advantages of welding over other joining methods. E2. I can list 5 various welding and cutting processes currently used in industry and in our shop. E3. I can recognize the American Welding Society (AWS) abbreviation for each of the welding and cutting processes currently in use in the industry. E4. I can describe the operation of each welding and cutting process.</p>	<p>True/False test. Must pass w95%. Prior to working in the lab, each student will have 3 chances to pass.</p> <p>D1-D2. Observation of safety practices utilized in the shop.</p> <p>E. Welding and Cutting E1.-E6. Oral assessment. E1.-E6. Written tests and quizzes.</p>	<p>F. Oxy-Acetylene welding</p>
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	<p>down the Oxy-Acetylene Welding and Cutting system.</p> <p>F2. Adjust the torch to a neutral flame for welding and cutting processes.</p> <p>F3. Produce an acceptable "puddle" on 1/8" metal with OAW.</p> <p>F3. Incorporate adding filler rod to their "puddle" to produce an acceptable stringer bead with OAW.</p>	<p>F. Oxy-Acetylene welding</p> <p>F1. I can safely set up and shut down the Oxy-Acetylene Welding and Cutting system.</p> <p>F2. I can adjust the torch to a neutral flame for welding and cutting processes.</p> <p>F3. I can produce an acceptable "puddle" on 1/8" metal with OAW.</p> <p>F3. I can incorporate adding filler rod to their "puddle" to produce an acceptable stringer bead with OAW.</p>	<p>E1.-E6.CSA-Practical assessment in classroom and shop.</p> <p>F. Oxy-Acetylene welding</p> <p>F1.-F3. Oral assessment.</p> <p>F1.-F3. Written tests and quizzes.</p>	
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				F1.-F3. CSA- Practical assessment in classroom and shop.	
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October 2014

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Content	Skills	Learning Targets	Assessment	Resources & Technology
<p>UEQ: What is Shielded Metal Arc Welding (SMAW)?</p> <p>G. Shielded Metal Arc Welding G1. Components G2. Electrodes G3. Safety G4. Technique</p> 	<p>G. Shielded Metal Arc Welding G1. List and identify the components of a SMAW station.</p> <p>G2. Explain the various components of the AWS electrode code.</p> <p>G3. Determine the correct shade of welding lens needed</p>	<p>G. Shielded Metal Arc Welding</p> <p>G1. I can list and identify the components of a SMAW station.</p> <p>G2. I can explain the various components of the AWS electrode code.</p>	<p>G. Shielded Metal Arc Welding</p> <p>G1.-G4. Oral assessment.</p> <p>G1.-G4. Written tests and quizzes.</p> <p>G1.-G4. CSA-Practical assessment in classroom and shop.</p>	<p>G. Shielded Metal Arc Welding</p>

<p>UEQ: What is Gas Metal Arc Welding (GMAW)?</p> <p>H. Gas Metal Arc Welding H1. Safety H2. Technique</p> 	<p>for a given thickness of metal with a required type of welding process.</p> <p>G3. Demonstrate ability to select the proper amperage for a given electrode.</p> <p>G4. Demonstrate ability to strike a welding arc and produce acceptable stringer beads.</p> <p>G4. Demonstrate ability to produce an acceptable multiple pass build-up on a 4" x 4" (approximate) plate.</p> <p>H. Gas Metal Arc Welding</p>	<p>G3. I can determine the correct shade of welding lens needed for a given thickness of metal with a required type of welding process.</p> <p>G3. I can demonstrate my ability to select the proper amperage for a given electrode.</p> <p>G4. I can demonstrate my ability to strike a welding arc and produce acceptable stringer beads.</p> <p>G4. I can demonstrate my ability to produce an acceptable multiple pass build-up on a 4" x 4" (approximate) plate.</p> <p>H. Gas Metal Arc Welding</p>	<p>H. Gas Metal Arc Welding</p> <p>H1- H2. Oral assessment.</p> <p>H1- H2. Written tests and quizzes.</p>	<p>H. Gas Metal Arc Welding</p>
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<p>UEQ: What is Gas Tungsten Arc Welding (GTAW)?</p> <p>I. Gas Tungsten Arc Welding</p> <p>I1. Safety I2. Technique</p> 	<p>H1. Student will demonstrate the ability to safely and properly set up and shut down the GMAW Welding system.</p> <p>H2. Student will be able to produce an acceptable stringer bead with GMAW on 3/16" mild steel.</p> <p>H2. Student will work at making Butt, Edge, Fillet, Lap, Corner, Bevel, Scarf, and Vee Welds using GMAW.</p> <p>G. Gas Tungsten Arc Welding I1. Student will demonstrate the ability</p>	<p>H1. I can demonstrate the ability to safely and properly set up and shut down the GMAW Welding system.</p> <p>H2. I can produce an acceptable stringer bead with GMAW on 3/16" mild steel.</p> <p>H2. I can work at making Butt, Edge, Fillet, Lap, Corner, Bevel, Scarf, and Vee Welds using GMAW.</p> <p>G. Gas Tungsten Arc Welding I1. I can demonstrate the ability to safely and properly set up and shut down the GMAW</p>	<p>H1- H2. CSA-Practical assessment in classroom and shop.</p> <p>G. Gas Tungsten Arc Welding</p> <p>I1-I2. Oral assessment.</p> <p>I1-I2.. Written tests and quizzes.</p> <p>I1-I2. CSA-Practical assessment in classroom and shop.</p>	<p>G. Gas Tungsten Arc Welding</p>
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	<p>to safely and properly set up and shut down the GMAW Welding system.</p> <p>I2. Student will be able to produce an acceptable "puddle" on 1/8" stainless steel with GTAW.</p> <p>I2. Student will be able to incorporate adding filler rod to their "puddle" to produce an acceptable stringer bead with GTAW.</p> <p>I2. Student will be able to make an acceptable Butt Weld with GTAW.</p> <p>I2. Student will experiment with various equipment settings and changing the variables of the welding procedures to get the best results in each of the welding joints (Butt, Edge,</p>	<p>Welding system.</p> <p>I2.1 can produce an acceptable "puddle" on 1/8" stainless steel with GTAW.</p> <p>I2.1 can incorporate adding filler rod to their "puddle" to produce an acceptable stringer bead with GTAW.</p> <p>I2.1 can make an acceptable Butt Weld with GTAW.</p> <p>I2. I can experiment with various equipment settings and changing the variables of the welding procedures to get the best results in each of the welding joints (Butt, Edge, Fillet, Lap, Corner, Bevel, Scarf, and Vee).</p> <p>I2. I can make a GTAW Fillet weld with</p>		
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	<p>Fillet, Lap, Corner, Bevel, Scarf, and Vee).</p> <p>I2. Student will be able to make a GTAW Fillet weld with stainless steel and mild steel.</p>	<p>stainless steel and mild steel.</p>		
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November 2014

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<p>UEQ: •How are products developed?</p> <p>J. Product development</p> <p>J1. Product life cycle J2. Research and development J3. Product design J4. Product engineering</p> 	<p>J. Product development</p> <p>J1. Describe product life cycle theoretically and in terms of everyday products. J2. Describe research and development. J2-J3. Identify types of research and development methodology. J3. Describe product design. J3. Apply processes of product design to</p>	<p>J. Product development</p> <p>J1. I can describe product life cycle theoretically and in terms of everyday products.</p> <p>J2. I can describe research and development.</p> <p>J2-J3. I can identify types of research and development methodology.</p>	<p>J. Product development</p> <p>J1-J4. Student writing - one page essay elaborating on product development as a part of the manufacturing industry. J1-J4. Student participation in class discussion of product development J1-J4. CSA- esigned flow chart for design process.</p>	<p>J. Product development</p> <p>Handouts/ sample projects World Wide Web Modern Metalworking-GlencoeWilcox -pages593-606</p>

	<p>individual's project.</p> <p>J4. Describe product engineering.</p> <p>J3-J4. Apply specific processes of product engineering to individual's project.</p> <p>J1-J4. Prepare appropriate plans, drawings for individual's project in keeping with engineering conventions.</p>	<p>J3. I can describe product design.</p> <p>J3. I can apply processes of product design to individual's project.</p> <p>J4. I can describe product engineering.</p> <p>J3-J4. I can apply specific processes of product engineering to individual's project.</p> <p>J1-J4. I can prepare appropriate plans, drawings for individual's project in keeping with engineering conventions.</p> <p>J1-J4. I can construct a major project utilizing all elements of product development.</p>	<p>J1-J4. CSA- esign organizational chart of project incorporating key concepts of product development.</p> <p>J1-J4. CSA- Student prepared working drawings of a specific project.</p> <p>J1-J4. CFA- Project meets specification of project grading rubric.</p>	
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