

General Metals

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September 2020

General Metals

Content	Skills	Learning Targets	Standards	Assessment	Resources & Technology
<p>CEQ: WHAT ARE THE METAL 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 are career options in the Metal's industry?</i></p> <p>B. Metal's Careers</p>	<p>A. Course Introduction A1-A2. Identify course content and grading. A3. Identify how Metals impact the manufacturing industry</p> <p>B. Metal's Careers B1. Discover careers in Metals manufacturing</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 Metals impact industry</p> <p>B. Metal's Careers B1. I can list 10 different career options in Metals manufacturing.</p>		<p>A. Course Introduction A1. Guided class discussion with observer notes. A3. Each student will list 3 examples of how metals impact our lives.</p> <p>B. Metal's Careers B1. Career list</p>	<p>A. Course Introduction</p> <p>B. Metal's Careers B1. World Wide Web B1. Video "Metals" History channel production</p>

<p>UEQ: •<i>What is Metal?</i></p> <p>C.Metal C1. Ferrous C2. Non-ferrous C3. Precious metals</p> <p>UEQ: •<i>What is Metal shop safety?</i></p> <p>D.Safety D1. Personal safety D2. Shop/machine safety</p>	<p>C.Metal C1-C3. Identify metal samples C1-C3. Identify properties associated with each family of metals.</p> <p>D.Safety D1-D2. Recognize potential hazards. D1-D2. Identify personal and machine/tool safety. D2. Discuss shop safety.</p>	<p>C.Metal C1-C3. I can identify 5 different metal samples. C1-C3. I can describe and list 3 major properties of different metals.</p> <p>D.Safety D1-D2. I can recognize potential hazards. D1-D2. I can identify personal and machine/tool safety. D2. I can discuss shop safety.</p>	<p>C.Metal C1-C3. CSA- Complete "Introduction to Metals" worksheet. 100 % complete. C1-C3. CSA - Each student will identify a metal sample as it is held up in front of the room.</p> <p>D.Safety D1-D3 True/False test. Must pass w95%. Prior to working in the lab, each student will have 3 chances to pass.</p>	<p>C.Metal Video "Steel in America" Disney/USS production Video "Metals" History channel production Text reading</p> <p>D.Safety Text reading Classroom discussion Safety videos</p>
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<p>UEQ: •<i>What are measuring and layout tools are used in the metals industry?</i></p> <p>E.Measuring/layout tools</p> <p>E1. Micrometer E2. Vernier caliper E3. Dial Caliper E4. Height gauge E5. Surface Plate E6. Combination square E7. Try square E8. Steel rule</p>	<p>E.Measuring tools/layout tools</p> <p>E1-E4 Measure objects to .001" accuracy.</p> <p>E5. Identify uses for a surface plate. E6-E7. Compare objects using squares. E8. Measure objects to 1/16".</p>	<p>E.Measuring tools/layout tools</p> <p>E1-E4 I can measure objects to .001" accuracy.</p> <p>E5.I can list 5 uses for a surface plate. E6-E7. I can compare objects using squares. E8. I can measure objects to 1/16".</p>	<p>E.Measuring tools/layout tools</p> <p>E1-E4.CSA- Measure accurately to the .001 of an inch- Activity : micrometer reading E1-E4. Teacher observation</p> <p>E1-E7. Demonstrate proper use and care of all measuring tools and equipment.</p> <p>E8. Measure accurately to the 1/16 of an inch</p> <p>Activity: CS A- ruler reading</p>	<p>E.Measuring tools/layout tools</p> <p>E1-E4 Samples for measurement</p> <p>E1-E7 Worksheets</p>
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<p>UEQ: • <i>What hand tools are used in the Metal's industry?</i></p> <p>F.Hand tools</p> <p>F1. Files F2. Hacksaw F3. Hammers F4. Chisels/punches F5. Taps and dies F6. Wrenches</p>	<p>F.Hand tools</p> <p>F1-F6. Identify tools by name and use. F1-F6. Apply safety rules for hand tools F1-F6. Complete benchworking project using handtools. F1-F6. Demonstrate proper care and use of all hand tools for all subsequent lab projects.</p>	<p>F.Hand tools</p> <p>F1-F6. I can identify tools by name and use. F1-F6. I can safely use hand tools</p>		<p>F.Hand tools</p> <p>F1-F6. CFA- Drill guage project is completed accurately to drawing specification. Project success will be 80% of all tolerances.</p>	<p>F.Hand tools</p> <p>Handout/ project drawing for drill guage project.</p>
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October 2019

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<p>UEQ: • <i>What is machining of metal?</i></p> <p>G.Machine tool</p> <p>G1. Engine lathe G2. Vertical milling machine G3. Surface grinder G4. CNC mill</p>	<p>G.Machine tool</p> <p>G1-G3. Identify parts for each machine tool. G1-G3. Apply safety rules for each machine tool. G1-G3. Demonstrate proper setup and operation for each machine tool. G1. Turn a piece of</p>	<p>G.Machine tool</p> <p>G1-G3.I can identify and list 5 major parts for each machine tool machine. G1-G3. I can operate each machine tool safely. G1-G3. I can properly setup and operation each machine tool.</p>	<p>G.Machine tool</p> <p>G1-G3. Student can accurately discuss parts of machines with instructor. G1- G3. CFA- Student can successfully complete the projects without injury to self or anyone else. G1-G2. CFA- rojects are completed within</p>	<p>G.Machine tool</p> <p>Metal engine lathes Vertical milling machines Surface grinder HAAS Lathe HAAS Mill Project drawing Step turning Mill step</p>

<p>G5. CNC lathe</p> <p>UEQ: • <i>What is a metal foundry?</i></p> <p>H.Foundry H1. Equipment and tools H2. Materials H3. Process</p> <p>UEQ: • <i>What is sheetmetal?</i></p> <p>I.Sheetmetal I1. Equipment and tools</p>	<p>aluminum to specification G2. Mill a piece of aluminum to specification G3. Grind a piece of steel to specification G4-G5. Locate and run a pre-programmed part on the CNC machine.</p> <p>H.Foundry H1. Identify tools by name and use. H2. Identify materials used in a foundry H1-H3. Apply safety rules for foundry tools and processes H1-H3. Complete a simple foundry casting project.. H1-H3. Complete a split-pattern foundry casting project..</p> <p>I.Sheetmetal I1. Identify tools by name</p>	<p>G1. I can turn a piece of aluminum to specification on the Clausing lathe. G2. I can mill a piece of aluminum to specification on the Bridgeport mill. G3. I can grind a piece of steel to specification G4-G5. I can locate and run a pre-programmed part on the HAAS CNC lathe and mill.</p> <p>H.Foundry H1. I can list 5 tools by name and each use. H2. I can identify and list 5 materials used in a foundry H1-H3. I can apply safety rules for foundry tools and processes H1-H3. I can complete a simple foundry casting project.. H1-H3. I can complete a split-pattern foundry casting project.</p> <p>I.Sheetmetal I1. I can list 5 tools by name and each use.</p>	<p>prescribed tolerances. +/- .005" G3. CFA- roject is completed within prescribed tolerances. +/- .003" G4-G5.CFA- Project completed</p> <p>H.Foundry H1. Student can accurately discuss tools and equipment names in the foundry with instructor. H1- H3. CFA- tudent can successfully complete the projects without injury to self or anyone else. H1-H3.CFA- Projects shall be cast and cleaned according to examples.</p> <p>I.Sheetmetal I1. Student can accurately discuss tools and</p>	<p>drill guage</p> <p>H.Foundry Foundry tools Aluminum patterns cleaning equipment</p> <p>I.Sheetmetal Sheetmetal shears Sheetmetal brake</p>
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I2. Materials I3. Process	and use. I2. Identify materials used in sheetmetalworking. I1-I3. Apply safety rules for sheetmetal tools and processes I1-I3. Construct a sheetmetal tool tray	I2 I can identify materials and list 5 materials used in sheetmetalworking. I1-I3. I can apply safety rules for sheetmetal tools and processes I1-I3. I can construct a sheetmetal tool tray	equipment names with instructor I1- I3.CFA- Student can successfully complete the projects without injury to self or anyone else. I1-I3. CFA- ooltray shall meet 80% of tolerances and specifications according to the drawing.	Sheetmetal snips Sheetmetal notcher Sheetmetal roll form Spot welder
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November 2019

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UEQ: • <i>What is Welding?</i> J.Welding J1. Equipment and tools J2. Materials J3. Process 	J.Welding J1. Identify tools and machines by name and use. J2. Identify materials used for welding. J1-J3. Apply safety rules for welding tools and processes J1-J3. Apply skills to complete the following weld samples in the flat position. puddling beading outside corner butt	J.Welding J1 .I can identify and list 5 tools and machines by name and use. J2. I can identify and list 5 materials used for welding. J1-J3. I can apply safety rules for welding tools and processes J1-J3. I can apply skills to complete the following weld samples in the flat position. puddling beading outside corner	J.Welding J1-J2. Student can accurately discuss tools, equipment and materials with instructor. J1- J3.CFA- Student can successfully complete the projects without injury to self or anyone else. J1-J3. CFA- eld samples shall be considered successful if they meet 80% of the requirements found on the grading rubric.	J.Welding Arc welder MIG welder Oxy-acetylene torch set Plasma cutter Ironworker

	lap padding fillet	butt lap padding fillet		
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