

Advanced Manufacturing & Fabrication - Metals

Apply safety principles, practices, philosophy, and guidelines to the work environment. [STS.HS.2.1](#)

- a** Complete applicable safety assessment with 100% accuracy. [STS.HS.2.1.A](#)
- b** Employ appropriate Personal Protective Equipment (PPE) while in the lab setting. [STS.HS.2.1.B](#)
- c** Employ eye protection in compliance with Neb. Rev. Statute 79–715. [STS.HS.2.1.C](#)
- d** Employ the safe application of tools and machines. [STS.HS.2.1.D](#)
- e** Explain the main hazards that are possible in the lab setting. [STS.HS.2.1.E](#)
- f** Demonstrate proper handling and storing of materials and chemicals. [STS.HS.2.1.F](#)

Execute accurate measurements using precision metal measurement tools. [STS.HS.2.2](#)

- a** Identify types of precision measurement tools. [STS.HS.2.2.A](#)
- b** Categorize precision measurement tools by use. [STS.HS.2.2.B](#)
- c** Differentiate between measurement tools and layout tools. [STS.HS.2.2.C](#)
- d** Demonstrate the accurate use of measurement and layout tools to 1/64" precision or 0.5mm precision. [STS.HS.2.2.D](#)

Solve math functions and formulas to complete metals job or workplace tasks. [STS.HS.2.3](#)

- a** Identify whole numbers, decimals, fractions, and complex numbers. [STS.HS.2.3.A](#)
- b** Apply intermediate arithmetic operations. [STS.HS.2.3.B](#)
- c** Apply basic geometric operations. [STS.HS.2.3.C](#)
- d** Solve decimal or fraction conversions. [STS.HS.2.3.D](#)
- e** Solve metric or United States Customary System (USCS) conversions. [STS.HS.2.3.E](#)

Identify career opportunities in the metal manufacturing industry. [STS.HS.2.4](#)

- a** Describe work behaviors needed to be employable. [STS.HS.2.4.A](#)
- b** Employ appropriate work behavior that meets or exceeds metal industry standards. [STS.HS.2.4.B](#)

d Explain the required education, certification, or licensure needed for a metal manufacturing career. STS.HS.2.4.D

e Analyze the value that may be added to the community by manufacturing professionals. STS.HS.2.4.E

f Explain the industry standard compensation for a metal manufacturing professional. STS.HS.2.4.F

Apply manufacturing communications. STS.HS.2.5

a Define metal manufacturing terminology. STS.HS.2.5.A

b Generate a metal project proposal. STS.HS.2.5.B

c Estimate manufacturing timelines based on criteria. STS.HS.2.5.C

d Utilize business and interpersonal communication appropriate to the work environment. STS.HS.2.5.D

Describe the materials, tools, machines, and processes required to manufacture a metal product. STS.HS.2.6

a Identify the various types of metals and their characteristics. STS.HS.2.6.A

b Differentiate additive and subtractive manufacturing. STS.HS.2.6.B

c Identify fasteners by their industry standard applications. STS.HS.2.6.C

d Differentiate between various types of mechanical and chemical fasteners. STS.HS.2.6.D

e Estimate amount of materials and supplies needed for a product. STS.HS.2.6.E

f Determine feed rate and speed settings for a material and process. STS.HS.2.6.F

g Explain the operation and application of common metal industry finishes. STS.HS.2.6.G

h Assess potential environmental and health impacts of using specific materials or processes. STS.HS.2.6.H

i Determine the correct tools, machines, and processes needed to produce a specific metal product. STS.HS.2.6.I

Manufacture a custom-level product that uses metal as its primary material. STS.HS.2.7

a Interpret plans, drawings, and specifications to process materials. STS.HS.2.7.A

b Coordinate the standard operation and application of tools and machines along the manufacturing process. STS.HS.2.7.B

c Plan and apply the type of materials, processes, and finishes required to manufacture a specific product. STS.HS.2.7.C

d Critique a finished product. STS.HS.2.7.D

e Appraise the manufacturing process for streamlining opportunities. STS.HS.2.7.E