

Power, Structural, and Technology Systems Fundamentals (2021-)

Identify careers in the agricultural mechanics industry in the areas of agricultural construction, agricultural electrical systems, welding and metal fabrication, and agriculture power machinery. [AFNR.HS.26.1](#)

- a** Identify career opportunities in Agricultural Mechanics in the local community. [AFNR.HS.26.1.A](#)
- b** Identify professional organizations associated with agricultural mechanics skills and related occupations. [AFNR.HS.26.1.B](#)
- c** Apply information in career planning and employment situations related to agricultural mechanics. [AFNR.HS.26.1.C](#)

Model principles of a safe work environment, including safety practices. [AFNR.HS.26.2](#)

- a** Identify potential hazards in the agricultural mechanics laboratory and/or work setting. [AFNR.HS.26.2.A](#)
- b** Select safety equipment and procedures for various agriculture-related activities. [AFNR.HS.26.2.B](#)
- c** Demonstrate safety procedures and behavior while working in the agriculture classroom, labs, and/or work sites. [AFNR.HS.26.2.C](#)
- d** Identify personal protective equipment required for various activities conducted in the agricultural mechanics laboratory and industry. [AFNR.HS.26.2.D](#)
- e** Safely operate all hand tools, power tools, and equipment in the agricultural mechanics laboratory. [AFNR.HS.26.2.E](#)

Demonstrate the safe use of common tools and materials used in woodworking and agricultural construction. [AFNR.HS.26.3](#)

- a** Identify common woodworking tools used (e.g., hand tools, power tools, layout tools, measuring tools). [AFNR.HS.26.3.A](#)
- b** Demonstrate the proper care and use of tools (e.g., hand tools, layout tools, measuring tools). [AFNR.HS.26.3.B](#)
- c** Demonstrate appropriate techniques for restoring worn, damaged, or abused tools to good working condition. [AFNR.HS.26.3.C](#)

Select appropriate types of lumber, fasteners, and finish materials used in woodworking and agricultural construction. [AFNR.HS.26.4](#)

- a** Describe common woods including characteristics and uses. [AFNR.HS.26.4.A](#)
- b** Classify common dimensions of wood materials. [AFNR.HS.26.4.B](#)
- c** Select appropriate screws, nails, bolts, and other fasteners for various uses. [AFNR.HS.26.4.C](#)
- d** Compare different types of wood glues and their recommended uses. [AFNR.HS.26.4.D](#)
- e** Identify proper woodworking and agricultural construction preserving/ finishing materials. [AFNR.HS.26.4.E](#)

Demonstrate knowledge of electrical principles, tools, and materials necessary for planning and installation of electrical circuits for agricultural and residential applications. [AFNR.HS.26.5](#)

- a** Describe the basic principles of electrical theory. [AFNR.HS.26.5.A](#)
- b** Describe types of electrical circuits. [AFNR.HS.26.5.B](#)
- c** Define electrical terms and relationship between them (e.g., watts, volts, amps and resistance). [AFNR.HS.26.5.C](#)
- d** Explain the purpose of the National Electrical Code. [AFNR.HS.26.5.D](#)

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- d** Explain the purpose of the National Electrical Code. [AFNR.HS.26.5.D](#)
- e** Identify electrical symbols used in electrical schematics and floor plans of agricultural facilities. [AFNR.HS.26.5.E](#)
- f** Use appropriate electrical symbols and follow National Electrical Code requirements for electrical schematics [AFNR.HS.26.5.F](#)
- g** Demonstrate commonly used electrical tools in the agricultural industry. [AFNR.HS.26.5.G](#)
- h** Identify types of electrical cable used in agricultural applications. [AFNR.HS.26.5.H](#)
- i** Calculate load for specific circuit applications and describe potential hazards of overloads on a circuit. [AFNR.HS.26.5.I](#)
- j** Select conductors for circuit applications based on given load, location, temperature, and distance parameters. [AFNR.HS.26.5.J](#)

k Compare and contrast switches, receptacles, lighting outlet devices, grounding conductors, solderless connectors, and related materials for use in agricultural and residential electric circuits. [AFNR.HS.26.5.K](#)

l Identify steps in installing branch circuit enclosures, conductors and devices. [AFNR.HS.26.5.L](#)

Apply the operating principles of a four stroke engine, including components of and proper maintenance procedures, in accordance with the manufacturer's recommendations. [AFNR.HS.26.6.A](#)

a Explain how a small engine operates. [AFNR.HS.26.6.A](#)

b. Compare the similarities and differences between four-stroke-cycle engines and two-stroke-cycle engines. [AFNR.HS.26.6.B](#)

c Interpret service and parts manuals for small engines and identify operating instructions and safety procedures for operating small engines. [AFNR.HS.26.6.C](#)

d. Identify tools commonly used for small engine service and repair. [AFNR.HS.26.6.D](#)

e Create a maintenance calendar utilizing small engine owner's manuals. [AFNR.HS.26.6.E](#)

f Perform basic service procedures according to manufacturer's recommendations. [AFNR.HS.26.6.F](#)

g Compare proper maintenance procedures using service manuals from a variety of small engine manufacturers. [AFNR.HS.26.6.G](#)

Demonstrate the safe and efficient operation of agricultural tractors and related equipment. [AFNR.HS.26.7](#)

a Identify common types of machinery used in the agricultural industry. [AFNR.HS.26.7.A](#)

b Describe the functions and purposes of common types of machinery used in the agriculture industry. [AFNR.HS.26.7.B](#)
