

Agricultural Systems and Technology I

Levels: Grades 9-12
Units of Credit: 1.00
CIP Code: 010211
Core Code: 30-01-00-00-030
Prerequisite: None
Skill Test: # 110

COURSE DESCRIPTION

Students will learn basic skills related to the mechanical activities involved with agricultural production and service. Instruction includes field and laboratory application of the concepts taught. Students will develop skills in the areas of working hot and cold metal, tool reconditioning, plumbing, painting, bill of materials, small gas engines, and basic welding. Emphasis will be placed on safety and proper use of tools and equipment.

CORE STANDARDS, OBJECTIVES, AND INDICATORS

STANDARD 1

Students will develop an understanding of the role of FFA in Agricultural Education Programs.

Objective 1: Students will understand the history and organization of FFA.

- a. Explain how, when, and why the FFA was organized.
- b. Explain the mission and strategies, colors, motto, parts of the emblem, and the organizational structure of the FFA.

Objective 2: Students will discover opportunities in FFA.

- a. Describe how the FFA develops leadership skills, personal growth, and career success.
- b. Identify major state and national activities available to FFA members.

Objective 3: Students will determine FFA degrees, awards, and CDE's.

- a. Explain the FFA degree areas.
- b. Explain various team and individual Career Development Events.

STANDARD 2

Students will understand the benefits of a Supervised Agricultural Experience (SAE) Program.

Objective 1: Determine the benefits of an SAE.

- a. Explain the importance of goals and career ladders.
- b. Define supervised horticultural/agricultural experience.
- c. Explain the benefits of supervised horticultural/agricultural experience programs.

Objective 2: Determine the kinds of SAE programs.

- a. Explain the difference between entrepreneurship and placement of SAE's.
- b. Describe research/experimentation and exploratory SAE's.
- c. Explain the characteristics of a good SAE program and student responsibilities that are involved.

Objective 3: Research possible SAE programs.

- a. Identify career interest areas in agriculture.
- b. Identify skills needed for career success.
- c. Explain opportunities for SAE programs.

Objective 4: Plan an SAE program.

- a. Identify the steps in planning an SAE program.
- b. Identify the parts of an annual SAE program plan.
- c. Discuss the function of a training plan and/or agreement in an SAE program.

Objective 5: Implement SAE programs.

- a. Discuss the importance of keeping records on an SAE program.
- b. Explain the types of financial records needed to support a chosen SAE program.
- c. Identify standards to follow in keeping records on an SAE program.

STANDARD 3

Students will identify hazards in Agricultural Mechanics.

Objective 1: Identify the three conditions necessary for combustion.

Objective 2: Explain how to prevent fires in agricultural mechanics.

Objective 3: Identify the different classes of fires and the different types of fire extinguishers.

Objective 4: Describe the proper use of fire extinguishers.

Objective 5: Describe the different types of burns that can occur in agricultural mechanics.

STANDARD 4

Students will demonstrate safe practices when working in laboratories and other enclosed facilities and when operating and working around laboratory equipment, materials, and chemicals.

Objective 1: Explain how to create a safe place to work.

Objective 2: Describe what each safety color means and where it is used.

Objective 3: Describe how to select appropriate protective clothing and devices for personal protection.

STANDARD 5

Students will demonstrate basic surveying and soil and water management skills.

Objective 1: Describe land measurement and legal descriptions.

Objective 2: Measure land and use surveying equipment.

Objective 3: Apply profile-leveling techniques.

Objective 4: Apply differential leveling techniques.

Objective 5: Explain the importance of managing soil, water, and waste.

Objective 6: Install lawn irrigation equipment.

STANDARD 6

Students will perform basic plumbing and soldering skills.

Objective 1: Discuss and design plumbing systems.

Objective 2: Install and repair galvanized steel pipe and fittings.

Objective 3: Install and repair copper tubing and fittings.

Objective 4: Install and repair plastic pipe and fittings.

Objective 5: Maintain and repair plumbing systems.

STANDARD 7

Students will select and properly use tools to construct wood projects.

Objective 1: Select and use hand tools to layout, cut, shave, bore, hood, turn, drive, and wreck projects.

Objective 2: Use construction fasteners and hardware.

Objective 3: Install and repair copper tubing and fittings.

STANDARD 8

Students will paint and/or apply protective coatings.

Objective 1: Prepare surfaces and select paints/preservatives.

Objective 2: Select applicators and apply finishes.

STANDARD 9

Students will select, maintain, repair, and operate small engines.

Objective 1: Use engine measurement tools and gap/install spark plugs.

Objective 2: Use, classify, and service small gas engines.

Objective 3: Mix gas and oil for two-cycle engines.

Objective 4: Start, operate and shut down a small gas engine.

Objective 5: Prepare an engine for extended storage.

STANDARD 10

Students will select, maintain, and safely operate oxyfuel welding equipment and systems.

Objective 1: Apply oxyfuel welding processes and techniques.

Objective 2: Weld mild steel with filler rod.

Objective 3: Cut various thickness of mild steel with an oxy-acetylene cutting torch.

STANDARD 11

Students will select, maintain, and safely operate shielded metallic arc welding (SMAW) and gaseous metallic arc welding (GMAW) systems.

Objective 1: Apply shielded metallic arc welding techniques.

Objective 2: Apply gaseous metallic arc welding.

Objective 3: Weld mild steel in a flat position.

Objective 4: Weld butt welds in the flat position.

Objective 5: Weld fillet welds in the flat position.

Objective 6: Weld lap welds in the flat position.

STANDARD 12

Students will fabricate with metal.

Objective 1: Identify types of metals.

Objective 2: Plan and design projects with a bill of materials included.

Objective 3: Fabricate shop projects using metal.