

Fundamental Ag Structures Technology 18403

Rationale Statement:

This course is offered to meet the basic needs of agricultural structures industry. South Dakota demand is increasing with a shortage of certified electricians, plumbers, contractors and mechanics. Classroom and laboratory content may be enhanced by utilizing appropriate equipment and technology. Algebra, geometry, trigonometry, English and human relations skills will be reinforced in the course. Work-based learning strategies appropriate for this course are school-based enterprises and field trips. This class is reinforced through the FFA and SAE programs, the Ag Mechanics Career Development Events and related Proficiency Awards areas. Each student will be expected to complete a Supervised Agricultural Experience or Internship project.

Suggested grade level: 9th – 12th

Topics covered:

- Safety
- Plan creation
- Cost estimation
- Ag structure assembly
- Electricity
- Land measurements
- Surveying



Indicator #1: Use safe practices associated with agriculture structures.

Bloom's Taxonomy Level	Standard and Examples
Applying	<p>Ag S 1.1 Demonstrate safe use and proper skills in the construction of agriculture structures.</p> <p>Examples:</p> <ul style="list-style-type: none">• Demonstrate safe use of measurement and layout tools.• Demonstrate safe and proper techniques when using hand and power tools.• Recognize dangers associated with ag structures.• Utilize machinery and equipment safely.

Indicator #2: Write plans for a project.

Bloom's Taxonomy Level	Standard and Examples
Applying	<p>Ag S 2.1 Use computer skills and drafting tools to develop sketches and plans.</p> <p>Examples:</p> <ul style="list-style-type: none">• Use current technology to develop simple plans and sketches of a metal or wood project.• Interpret symbols and drawing techniques used to develop simple plans and sketches on their individual project.• Use scale measurement and dimension to develop simple plans and sketches.

Indicator #3: Examine structural requirements to estimate project costs.

Bloom's Taxonomy Level	Standard and Examples
Applying	<p>Ag S 3.1 Write a complete materials list and project cost estimate.</p> <p>Examples:</p> <ul style="list-style-type: none">• Choose materials to be used in agricultural construction.• Interpret elements of project cost estimate, materials, labor, etc.• Determine cost of the project.• Select applicable construction materials.• Estimate and select type and quantities of materials and other costs associated with specified project plan.• Prepare bid package for a project.

Indicator #4: Construct an agriculture structure.

Bloom's Taxonomy Level	Standard and Examples
Creating	<p>Ag S 4.1 Assemble components of a structure.</p> <p>Examples:</p> <ul style="list-style-type: none">• Construct a wall.• Construct a floor joist.• Erect a rafter.• Side a building.

Indicator #5: Demonstrate electrical principles.

Bloom's Taxonomy Level	Standard and Examples
Applying	<p>Ag S 5.1 Use applicable instruments to demonstrate knowledge of basic electricity.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Demonstrate the use of various meters. • Use a circuit tester. • Discuss various energy sources. • Show an understanding of electricity codes and regulations.
Applying	<p>Ag S 5.2 Demonstrate wiring and electrical applications.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Select conductor size and type. • Determine circuit protection requirements. • Remove and replace a fuse. • Wire an outlet controlled by a single-pole switch. • Install a lighting outlet. • Illustrate importance of and techniques for grounding wires. • Interpret electricity codes and regulations.

Indicator #6: Use soil and water engineering descriptions and equipment.

Bloom's Taxonomy Level	Standard and Examples
Applying	<p>Ag S 6.1 Perform legal land descriptions.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Determine legal land descriptions. • Use land measurement equipment. • Calculate land areas and convert to acres.

Applying	Ag S 6.2 Operate surveying equipment. Examples: <ul style="list-style-type: none">• Identify types and uses of levels.• Set up and adjust level.• Read a leveling rod.• Lay out contour line with a hand level.• Complete a topographic survey.• Establish a grade survey.
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