

## **Intermediate Agriscience (Ag II) Curriculum**

### **Course # 420102**

Intermediate Agriscience is a one-credit course that provides students with an intermediate understanding of the Agriculture, Food and Natural Resources cluster, which contains five pathways—Power, Structure, and Technical Systems; Environmental and Natural Resources Systems; Animal Systems; Plant Systems; and Agribusiness Systems. Students are involved in classroom and laboratory activities in each of the five pathway areas. The emphasis for Intermediate Agriscience is plant systems. The curriculum will provide opportunities for Career Readiness Indicators utilizing resources from the Alabama Green Industry Training Center, Landscape Management Technician, and NCCER.

Content standards for this course are not intended to serve as the entire curriculum. Teachers are encouraged to expand the curriculum beyond the limits of these content standards to accommodate specific community interests and utilize local resources.

Intermediate Agriscience is part of a four course sequence that comprises the General Agriscience Program. This course should be offered in series along with Fundamentals of Agriscience, Advanced Agriscience, and Applied Agricultural Mechanics to 9<sup>th</sup> through 12<sup>th</sup> grade students. It is strongly encouraged that Fundamentals of Agriscience be required as a pre-requisite for this course.

Career and technical student organizations are integral, co-curricular components of each career and technical education course. These organizations serve as a means to enhance classroom instruction while helping students develop leadership abilities, expand workplace-readiness skills, and broaden opportunities for personal and professional growth.

Students will...

#### **Agribusiness Systems**

1. Identify career and entrepreneurship opportunities in the field of agribusiness.
2. Explain the responsibilities of business ownership.
3. Define the characteristics of an effective entrepreneur.
  - Analyzing the components of the entrepreneurship SAE
4. Compare the types of business ownerships. (sole proprietorship, franchise, partnership, limited liability corporation {LLC}, corporation).
5. Discuss roles and functions of management, major components of the free enterprise system, law of supply and demand and characteristics of organizational structures of business.
6. Discuss depreciating capital, types of accounting systems and sources and procedures for obtaining agribusiness loans.

7. Develop marketing strategies of entrepreneurial services and products.
  - Interpreting research data on market trends

### **Foods and Food Processing**

8. Explain the percentage of each food dollar that is spent on marketing.
  - Exploring the effect of advertising on consumers

### **Natural Resources and Environmental Management**

9. Identify employment opportunities in the natural resources career areas.
  - Analyzing career opportunities in forestry
  - Analyzing career opportunities in fish and wildlife management
  - Analyzing career opportunities in environmental management/ecology
10. Identify potential safety hazards in Alabama forests.
  - Identifying hazards when dealing with wildlife
  - Identifying hazards when dealing with wild plants (e.g. poison oak)
  - Applying safety practices when hunting, boating, or using an atv
11. Evaluate the safe use of a chainsaw.
  - Cataloguing chainsaw parts
  - Identifying personal protective equipment when using a chainsaw
  - Employing the safe use of a chainsaw
  - Demonstrating proper maintenance of a chainsaw
    - i. Adjusting and sharpening a chain on a chainsaw
12. Interpret map characteristics and features.
  - Distinguishing markings on maps (topographical and projection)
    - i. Examples: colors, symbols, contour lines
  - Using scale to determine distance on maps
13. Explain basic forest management practices utilizing the Forestry FFA CDE booklet.
  - Comparing aquatic and terrestrial ecosystems
  - Categorizing wetlands, woodlands, grasslands/pasture, and forest lands

## Plant Systems

14. Evaluate safety practices used in plant systems.
  - Identifying personal protective equipment when dealing with plants and herbicides
  - Describing the importance of pest management in the agricultural industry
  - Comparing types of pesticides and how they control pests
  
15. Explain basic concepts of agronomy utilizing the FFA Land CDE booklet.
  - Evaluating soil texture
  - Determining slope and distance
  - Analyzing land capabilities
  
16. Identify the requirements needed to conduct a successful vegetable production operation.
  - Analyzing plant nutrient requirements
  - Determining plant fertilizer and lime requirements
  
17. Identify turf and landscape plants by common name.
  - Reviewing the FFA Nursery Landscape CDE plant list
  - Identifying common plant diseases
  - Performing techniques for correctly planting landscape plants
  
18. Explore greenhouse/nursery management techniques.
  - Create greenhouse /nursery production schedules
  - Differentiate techniques for maintaining greenhouse/nursery plants
    - i. Examples: transplanting, propagating, mulching, fertilizing, and irrigating
  - Identifying the types of tree pruning practices and tools used to complete those practices
  - Explaining the impact of biotechnology on plant breeding
  - Demonstrating the proper installation practices involved with being a Landscape Management Technician.
  
19. Developing an understanding the installation and maintenance of an irrigation system
  - Designing irrigation systems for greenhouse/nursery operations

## **POWER, STRUCTURAL, AND TECHNICAL SYSTEMS: CORRESPONDING NCCER MODULE**

### **Electricity**

20. Describe the career paths one might follow in the electrical trades.
  - Exploring the apprenticeship/training process for electricians
  - Identifying the tasks typically performed by electricians
  
21. Explain, describe, and demonstrate the use of safety equipment, protective clothing, and procedures applicable to agriculture in the electrical trade.
  - Identifying major components and functions of an electrical system
  - Recognizing PPE equipment and safe work practices
  - Explaining the purpose of OSHA
  - Describing techniques for finding shorts, grounds and opens in electrical circuits
  
22. Analyze components needed for wiring a structure.
  - Defining voltage and identify the ways in which it can be produced
  - Explaining the difference between conductors and insulators
  - Defining the units of measurement that are used to measure the properties of electricity
  - Identifying the meters used to measure voltage, current, and resistance
  - Explaining the basic characteristics of series and parallel circuits
  
23. Identify sources of electrical energy.
  - Explaining the basic characteristics of combination circuits
  
  - Calculating Kirchhoff's voltage law, the voltage drop in series, parallel, and series-parallel circuits
  
  - Calculating, using Kirchhoff's current law, the total current in parallel and series-parallel circuits
  
  - Using Ohm's law, find the unknown parameters in series, parallel, and series-parallel circuits
  
24. Demonstrate techniques for making electrical splices and connections for a single-pole switch with light, three-way switch with light, and a duplex receptacle.
  - Explain the role of the National Electrical Code® in residential wiring and describe how to determine electric service requirements for dwellings

- Explain the grounding requirements of a residential electric service
- Calculate and select service-entrance equipment
- Select the proper wiring methods for various types of residences
- Compute branch circuit loads and explain their installation requirements
- Explain the types and purposes of equipment grounding conductors
- Explain the purpose of ground fault circuit interrupters and tell where they must be installed
- Size outlet boxes and select the proper type for different wiring methods
- Describe rules for installing electric space heating and HVAC equipment
- Describe the installation rules for electrical systems around swimming pools, spas, and hot tubs
- Explain how wiring devices are selected and installed
- Describe the installation and control of lighting fixtures

## **Plumbing**

25. Design water supply and sewage drainage systems for a structure.
  - Describing the history of the plumbing profession
  - Identifying the responsibilities of a person working in the plumbing industry
    - i. Evaluating the personal characteristics of a professional
    - ii. Identifying the stages of progress within the plumbing profession and its positive impact on society
  - Identifying how green technology is incorporated into plumbing
  
26. Discuss the safe practices used in the plumbing trade.
  - Describing the common unsafe acts and unsafe conditions that cause accidents
  - Describing how to handle unsafe acts and unsafe conditions
    - i. Explaining how the cost of accidents and illnesses affects everyone on site
    - ii. Demonstrating the use and care of appropriate personal protective equipment
    - iii. Identifying job-site hazardous work specific to plumbers
    - iv. Identifying the benefits of a job safety analysis
  - Explaining how to work safely in and around a trench
  - Explain how to work safely in and around confined spaces

- Demonstrating the proper use of ladders
- Demonstrating how to maintain power tools safely
- Describing the lockout/tag out process

27. Identify tools used in plumbing.

- Identifying the basic hand and power tools used in the plumbing trade
- Demonstrating the proper use of plumbing tools
- Demonstrating the ability to select the proper tool(s) for tasks
- Demonstrating proper maintenance and storage for hand and power tools

28. Describing the safety requirements for using power and hand tools common to the plumbing trade.

29. Explain the selection of specific types of pipe used in plumbing.

- Identifying the various types of plastic pipe
- Evaluating the material properties, storage, and handling requirements of plastic pipe
- Identifying the types of fittings and valves used with plastic pipe
- Demonstrating the techniques used in hanging and supporting plastic pipe
- Properly measuring, cutting, and joining plastic pipe
- Analyzing the hazards and safety precautions associated with plastic pipe

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### NCCER MODULE CORRELATION GUIDE

#### Power Structural and Technical Systems: Corresponding NCCER Modules

<b>Electricity Content Standard Number</b>	<b>Correlated NCCER Module</b>
20.	Orientation to the Electrical Trade (2.5) Module ID 26101-11
21.	Electrical Safety (10) Module ID 26101-1
22.	Introduction to Electrical Circuits (7.5) Module ID 26103-11
23.	Electrical Theory (7.5) Module ID 26104-11
24.	Residential Electrical Services (15) Module ID 26111-11
<b>Plumbing Content Standard Number</b>	<b>Correlated NCCER Module</b>
25.	Introduction to the Plumbing Profession (5) Module ID 02101-12
26.	Plumbing Safety (22.5) Module ID 02102-12
27.	Tools of the Plumbing Trade (10) Module ID 021103-12
29.	Plastic Pipe and Fittings (12.5) Module ID 02106-12