

Fundamentals of Agriscience (AG I) Curriculum

Course # 420101

Fundamentals of Agriscience is a one-credit course that provides students with a fundamental overview 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 Fundamentals of Agriscience is based around the NCCER Core Curriculum including basic safety, construction math, hand tools, power tools, construction drawings, basic rigging, communication skills, employability skills, and materials handling.

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.

Fundamentals of Agriscience is a part of four courses that comprise the General Agriscience Program. This course should be offered in series along with Intermediate Agriscience, Advanced Agriscience, and Applied Agricultural Mechanics. It is strongly encouraged that Fundamentals of Agriscience be a required pre-requisite for the other courses in the program.

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...

Foods and Food Processing

1. Analyze the development of food science from prehistoric to modern times.
 - Explaining the timeline for food history in the U. S.
2. Evaluate food availability in the United States compared to that of other countries and cross-examine basic food availability in multiple countries.
3. Explore careers in the food science industry.
 - Researching a career in food science to determine education requirements, working conditions and salary

Natural Resource Systems/Environmental Management

4. Identify potential hazards in Alabama forests, including topographical hazards, stinging insects, venomous spiders and snakes, poisonous plants, hunting, boating and recreational vehicle safety.
5. Describe historical events that have influenced natural resources in Alabama and the United States.
 - Comparing and contrasting the roles of Alabama Natural Resource Agencies.
Examples: Alabama Forestry Commission, Alabama Cooperative Extension Service, Natural Resources Conservation Service, United States Forest Service, United States Department of Agriculture, Alabama Forestry Association, etc.
6. Describe the importance of forestry/natural resources to the economy of the local, county, state and nation.
7. Distinguish between game and non-game wildlife species.
 - Comparing classes of wildlife, including mammals, birds, reptiles, amphibians, and fish
 - Identifying common fish and wildlife species indigenous to Alabama
8. Explain the importance of conserving natural resources.
 - Identifying major sources of natural resource damage

Soil Science

9. Identify major soil areas in Alabama.
 - Identifying layers of soil in a soil profile
 - Determining the texture of various soil samples
 - Determining the land capability class for a given plot of land
 - Explaining how to adjust soil pH

Plant Science

10. Determine characteristics and functions of plants.

- Explaining plant processes, including photosynthesis, respiration, and transpiration
- Identifying the sixteen essential elements needed for plant health and growth
- Identifying various requirements needed to produce successful vegetable gardens, greenhouse plants, and landscape plants
- Propagating plants sexually and asexually
- Explaining how agricultural crops can be utilized as alternative fuel sources

Agribusiness

11. Discuss the history of Agriscience Education and its three circle model.

- Examining the history of the National FFA Organization
- Listing legislation in support of agricultural education

12. Identify characteristics of a SAE program, including manageability, record keeping, availability of facilities, and financing.

- Identifying principles of financial literacy, factors to be considered in agricultural entrepreneurial opportunities, and selecting an SAE

13. Demonstrate communication skills through career development events (CDEs), including prepared public speaking, extemporaneous speaking, creed speaking, and parliamentary procedure.

- Illustrating the communication process.
- Practicing listening and speaking skills.
- Refining reading and writing skills.

14. Determine factors in developing an effective career plan, including procedures for obtaining employment.

- Identifying various construction businesses.
- Demonstrating and explaining critical thinking skills.
- Deciphering and explaining computer skills.
- Analyzing relationship skills.
- Defining workplace issues.

15. Explore new technology in the agriculture industry and related skills found in agribusiness.

- Global Positioning Systems (GPS)
- Geographic Information Systems (GIS)

Animal Science

16. Identify prominent livestock breeds.

- Analyzing the history of major large animal breeds
- Describing facilities used to manage livestock

17. Compare breeding systems.

- Distinguishing between the functions of the male and female reproductive systems
- Comparing the benefits of Artificial Insemination (A.I.) over natural breeding

18. Evaluate and rank animals within a group based on established criteria.

- Comparing and contrasting key points of animal grading

19. Demonstrate an understanding of livestock marketing.

- Researching current livestock marketing in the Southeast

20. Describe proper waste management /pollution prevention procedures.

- Identifying proper waste disposal techniques and prevention defined by Alabama Department of Environmental Management

Biotechnology

21. Analyze biotechnology and the history of its development.
22. Understand the benefits and concerns in biotechnology.
 - Exploring ethical issues in biotechnology
23. Identify steps in biotechnology safety management.
 - Interpreting Material Safety Data Sheets (MSDS) and chemical labeling

Power Structural and Technical Systems: NCCER CORE CURRICULUM: Introductory Craft Skills

24. Identify causes and results of accidents in the construction trades.
 - Identifying hazardous recognition, evaluation and control
 - Describing elevated work and fall protection procedures
 - Applying ladder and stair safety
 - Identifying types of scaffolds
 - Analyzing struck by hazards precautions
 - Demonstrating electrical safety hazard procedures
 - Listing proper personal protective equipment layout
 - Explaining hazard communication standard
 - Identifying other job site hazards
25. Interpret mathematical applications related to the construction trades.
 - Working with lengths and measurements
 - Explaining the procedures to reduce fractions to their lowest terms
 - Analyzing decimals
 - Demonstrating the conversion process
 - Applying construction geometry procedures

26. Identify tool and equipment safety procedures in woodworking, welding, electrical, small engine repair, plumbing, and masonry operations.

- Explaining hammers
- Demonstrating ripping bars and nail pullers
- Assessing the uses for chisels and punches
- Identifying screwdrivers
- Applying pliers and wire cutting techniques
- Applying techniques associated with wrench turning
- Identifying socket and ratchet use in the agriculture industries
- Demonstrating proper torque wrench techniques
- Assessing rules and other measuring tools
- Explaining commonly used saws in the agriculture industries
- Explaining and identify digging tools

27. Identify tool and equipment safety procedures in woodworking, welding, electrical, small engine repair, plumbing, and masonry operations.

- Explaining safe use of electric, pneumatic, and hydraulic tools
- Identifying power drill and their use
- Analyzing the variety of power saws in agriculture settings
- Demonstrating grinding and sanding techniques and procedures
- Explaining miscellaneous power tools

28. Demonstrate the mechanical drawing process used in designing structures.

- Identifying drawing tools
- Analyzing six types of construction drawings
- Explaining drawing scales
- Explaining lines of construction and their symbols
- Assessing abbreviations, symbols, and keynotes
- Using gridlines to identify plan locations
- Investigating dimensions regarding building plans

29. Demonstrate an understanding of appropriate laboratory safety rules and techniques.

- Dissecting material handling basics
- Utilizing material handling safety techniques
- Describing material handling basics

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NCCER MODULE CORRELATION GUIDE

Power Structural and Technical Systems: NCCER CORE CURRICULUM: Introductory Craft Skills

Content Standard Number	Correlated NCCER Module
13.	Basic Communication Skills (7.5) Module ID #00107-09
14.	Basic Employability Skills (7.5) Module Id # 00108-09
24.	Basic Safety (12.5) Module ID # 00101-09
25.	Intro to Construction Math (10) Module ID #00102-09
26.	Intro to Hand Tools (12.5) Module Id #00103-09
27.	Intro to Power Tools (10) Module ID #00104-09
28.	Intro to Construction Drawings (10) Module ID# 00105-09
29.	Intro to Material Handling (5) Module #00109-09