Georgia CTAE: Agriculture, Food & Natural Resources Career Cluster

Basic Agricultural Science (2013)

Demonstrate employability skills required by business and industry. AFNR-BAS-1	1 **Communicate effectively through writing, speaking, listening, reading, and interpersonal abilities.** 1.1
	2 **Demonstrate creativity by asking challenging questions and applying innovative procedures and methods.** 1.2
	3 **Exhibit critical thinking and problem solving skills to locate, analyze and apply information in career planning and employment situations.** 1.3
	4 **Model work readiness traits required for success in the workplace including integrity, honesty, accountability, punctuality, time management, and respect for diversity.** 1.4
	5 **Apply the appropriate skill sets to be productive in a changing, technological, diverse workplace to be able to work independently and apply team work skills.** 1.5
	6 **Present a professional image through appearance, behavior and language.** 1.6
Relate the role of the FFA student organization in the students' personal development. AFNR-BAS-2	1 **Summarize the FFA history including a basic timeline of events, key people, and major historical occurrences of the organization.** 2.1
	2 **Illustrate the relationship of the FFA within the Agricultural Education model and describe the role and function of the organizational structure from the chapter to national level.** 2.2
	3 **Interpret basic FFA information such as the emblem, colors, motto, mission, salute, behavior, and official dress.** 2.3
	4 **Demonstrate communication skills individually and within group situations by using public speaking skills and parliamentary procedure abilities.** 2.4
	5 **Design personal leadership plan that includes opportunities for personal development through student, chapter, and community related activities.** 2.5
Explore, develop, and im Su	1 **Design, implement, and document SAE by recording steps, skills acquired, and financial information.** 3.1

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Experience (SAE) program by researching careers in agriculture and agribusiness. AFNR-BAS-3	**2** Demonstrate employability skills such as work ethic, timeliness, communication, and selfdirection. 3.2
	3 Explain the role of the different types of agribusiness in society and identify agribusinesses in the local community. 3.3
	4 Define agribusiness terminology and discuss the role of marketing in agricultural production. 3.4
	5 Analyze skills, education requirements, income, and advantages and disadvantages of careers in the agriculture industry. 3.5
Recognize how agriculture meets human needs today, in the past, and for the future. AFNR-BAS-4	**1** Explain the three basic human needs and sources for food, clothing, and shelter. 4.1
	2 Define agriculture. 4.2
	3 Identify major agricultural milestones or inventions and analyzes their impact on modern life and agriculture. 4.3
	4 Describe the eight major branches of the agriculture industry. 4.4
	5 Determine Georgia's top 10 agricultural commodities. 4.5
	6 Differentiate between agricultural imports and exports and list examples of each. 4.6
	7 Compare and contrast between agricultural products and byproducts and lists examples of each. 4.7
	8 Identify the top three agricultural commodities within each region of the United States and the world. 4.8
Determine and illustrate safety in the agriculture lab and agriculture worksites. AFNR-BAS-5	**1** Identify hazards in agricultural education labs and work sites. 5.1
	2 Select safety equipment and procedures for various agriculture related activities. 5.2
	3 Discuss the importance of safety in agricultural occupations. 5.3
	4 Demonstrate safety procedures and appropriate behavior while working in the agriculture classroom, labs, and/or work sites. 5.4
Describe soil formation and management and assess its relevance to pla an Skip to main content	**1** Describe soil formation and soil composition. 6.1
	2 Differentiate between soil components. 6.2
	xplain the importance of soil ecosystems. 6.3

management. AFNR-BAS-6	**4** Analyze the importance of slope, soil texture, erosion, and water movement in determining land capability and land use. 6.4
	5 Determine land class on a given site and select appropriate soil management practices. 6.5
	6 Analyze skills, education requirements, income, and advantages and disadvantages of careers in agronomy. 6.6
Demonstrate knowledge of physics used in agriculture as it relates to work, power, simple machines, and both past and present machinery used in the agricultural industry. AFNR-BAS-7	**1** Explain the areas of physics used in agriscience as it relates to work, power, simple machines and mechanical advantage. 7.1
	2 Analyze the use of thermal energy, electrical energy and compression in agriculture and describe basic principles of each. 7.2
	3 Trace the development of agricultural machinery. 7.3
	4 Interpret service manuals to develop tractor or lawn mower maintenance calendars and perform basic service and maintenance recommendations on a tractor or lawn mower. 7.4
	5 Demonstrate safe operating instructions and procedures for a tractor or lawn equipment as recommended by the manufacturer. 7.5
	6 Analyze skills, education requirements, income, and advantages and disadvantages of careers in the agricultural mechanics industry. 7.6
	7 Plan and construct basic Agricultural Mechanics project. 7.7
Identify the different areas of agriscience and relate the scientific classification system to organize and research the agriscience field. AFNR-BAS-8	**1** Define biotechnology and create a timeline of biotechnology milestones. 8.1
	2 Explain the importance of the scientific method in agriculture and list examples of current agriculture research. 8.2
	3 Design, implement, collect data, and determine conclusions by conducting scientific experiments in any field of agriculture. 8.3
	4 Research and report current agricultural biotechnology events or products. 8.4
	5 Analyze skills, education requirements, income, and advantages and disadvantages of careers in agriscience/biotechnology fields. 8.5
Define major components of the animal industry and outline the development of pr careers. AFNR-BAS-	**1** Analyze the role, importance, and scope of the dairy, beef, pork, poultry, equine, and small ruminant animal industries in modern agriculture. 9.1
	2 Identify and describe major breeds within each livestock segment. 9.2
	xplore the importance of alternative livestock in animal agriculture. 9.3

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	4 Define key terminology related to animal science and production practices (fact vs. fiction). 9.4
	5 Distinguish between animal welfare and animal rights. 9.5
	6 Explain the basic anatomy and label basic external parts of production animals. 9.6
	7 Differentiate between major wholesale/retail meat cuts of beef, pork, lamb, and poultry and compare the value of various meat cuts. 9.7
	8 Analyze skills, education requirements, income, and advantages and disadvantages of careers in the animal industry and explain how they differ from traditional on-farm animal husbandry. 9.8
	9 Provide for the care and welfare of animals. 9.9
Demonstrate basic skills in natural resource management. AFNR-BAS-10	1 Describe the importance of the forestry and natural resource industry to Georgia's economy. 10.1
	2 Label various parts of trees and explain their functions. 10.2
	3 Demonstrate the ability to measure forest products and forest related items. 10.3
	4 Identify basic equipment used in forestry. 10.4
	5 Identify important species of trees and wildlife in Georgia. 10.5
	6 Explain the relationship between wildlife and the environment. 10.6
	7 Compare and contrast approved practices in managing wildlife. 10.7
	8 Analyze skills, education requirements, income, and advantages and disadvantages of careers in the forest and natural resources industry. 10.8
Apply principles of science to food processing to provide a safe, wholesome and nutritious food supply. AFNR-BAS-11	1 Assess the importance of developing and maintaining sanitation standards. 11.1
	2 Explore government requirements and government agencies associated with food quality and food safety. 11.2
	3 Describe methods of food processing, preserving, and packaging. 11.3
	4 Explain the importance of food processing, preserving, and packaging. 11.4
	5 Demonstrate the processing, preserving, and packaging of foods using various methods and techniques. 11.5
	6 Analyzes skills, education requirements, income, and advantages and disadvantages of careers in the food processing industry. 11.6

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Apply principles of environmental science as it relates to agricultural production and sustainability. AFNR-BAS-12

1. **Identifies agricultural commodities that can be converted to alternative energy sources.** 12.1
2. **Analyzes the efficiency of renewable energy sources such as wind, solar, and biofuels.** 12.2
3. **Compares and contrasts current production practices such as organic, naturally raised systems, and conventional agricultural production with regard to their sustainability.** 12.3
4. **Demonstrates how intensive production systems such as aquaculture and vertical farming can maximize production while minimizing space requirements.** 12.4
5. **Debates how environmental legislation effects agricultural production.** 12.5
6. **Analyzes skills, education requirements, income, and advantages and disadvantages of careers in the agricultural environmental science industry.** 12.6

Explain and demonstrate basic plant science principles including plant health, growth and reproduction. AFNR-BAS-13

1. **Describe basic factors in plant growth.** 13.1
2. **Identify plant life cycles and list examples.** 13.2
3. **Label the major parts of the plant and explain functions of each plant part.** 13.3
4. **Compare and contrast photosynthesis, respiration, and transpiration and state their importance.** 13.4
5. **Identify important floriculture and nursery/landscape plants utilized in Georgia.** 13.5
6. **Explain the roles of essential plant nutrients for plant growth and reproduction.** 13.6
7. **Debate the use of organic and inorganic fertilizers in plant production.** 13.7
8. **Illustrate and demonstrate sexual and asexual methods of various plant propagation techniques.** 13.8
9. **Sequence the steps of pollination and fertilization.** 13.9
10. **Demonstrate scarification, stratification, and planting seeds.** 13.10
11. **Outline germination steps and list conditions under which germination occurs.** 13.11
12. **Analyze skills, education requirements, income, and advantages and disadvantages of careers in the plant science industry.** 13.12