

# Introduction to Agricultural Sciences

<b>Primary Career Cluster:</b>	Agriculture, Food, & Natural Resources
<b>Course Contact:</b>	<a href="mailto:CTE.Standards@tn.gov">CTE.Standards@tn.gov</a>
<b>Course Code(s):</b>	C18X00
<b>Prerequisite(s):</b>	None
<b>Credit:</b>	N/A
<b>Grade Level:</b>	7-8
<b>Programs of Study and Sequence:</b>	This course serves as a middle school primer for all programs of study in the Agriculture, Food, & Natural Resources career cluster.
<b>Aligned Student Organization(s):</b>	FFA: <a href="http://www.tnffa.org">http://www.tnffa.org</a>
<b>Supervised Agricultural Experience:</b>	All Agriculture students are encouraged to participate in a Supervised Agricultural Experience (SAE) program. In addition, teachers are encouraged to use embedded WBL activities. For information, visit <a href="https://www.tn.gov/content/tn/education/career-and-technical-education/work-based-learning.html">https://www.tn.gov/content/tn/education/career-and-technical-education/work-based-learning.html</a> .
<b>Available Student Industry Certifications:</b>	None
<b>Teacher Endorsement(s):</b>	048, 150, 448, and 950
<b>Required Teacher Certifications/Training:</b>	None
<b>Teacher Resources:</b>	<a href="https://www.tn.gov/education/career-and-technical-education/career-clusters/cte-cluster-agriculture-food-natural-resources.html">https://www.tn.gov/education/career-and-technical-education/career-clusters/cte-cluster-agriculture-food-natural-resources.html</a>

## Course Description

*Introduction to Agricultural Sciences* is a middle school course designed to provide a general introduction to the agriculture, food, and natural resource industry. This course helps students understand the importance of agriculture in daily life by exploring basic principles of agribusiness, agricultural mechanics, animal science, natural resources, and horticulture. Depending on LEA capacity and preference, the course may be tailored for seventh and eighth grades, with the additional option for flexible implementation schedules. Upon completion of this course, proficient students will be prepared for high school coursework in agriculture.

## Program of Study Application

This course can serve as an introductory course leading to all programs of study in the Agriculture, Food and Natural Resources career cluster. For more information on the benefits and requirements of implementing these programs in full, please visit the Agriculture, Food, and Natural Resources website at <https://www.tn.gov/education/career-and-technical-education/career-clusters/cte-cluster-agriculture-food-natural-resources.html>.

## Course Standards

### Agriculture and Society

- 1) Create an accurate summary of the importance of agriculture in daily life. Identify sources of different types of food and fiber products and depict them in a visual representation.\*
- 2) Review the historical importance of agriculture and its role in the formation of the United States. Write an informative essay that identifies the major changes and advancements that have occurred in agriculture over the last 200 years, specifying the societal and economic impacts of these advancements.
- 3) Explore local career opportunities in agriculture and examine the importance of the agriculture industry to Tennessee's economy. Use local job postings and Tennessee labor and workforce data.\*

### Agriscience Investigation

- 4) Draw evidence from informational and technical texts to evaluate the role of scientific investigation in the agriculture industry. Design and conduct an Agriscience Fair project using the scientific investigation process.\*
- 5) Demonstrate in a live setting or in a presentation the ability to follow procedures precisely, attending to special cases or exceptions noted in appropriate materials, to safely utilize agricultural lab equipment. Demonstrate ability to pass a safety test at 100 percent accuracy on all lab equipment.\*

### Introduction to Agribusiness

- 6) Identify types of agribusiness and explore the different roles of local and regional career opportunities in agribusiness. Use local job postings and Tennessee labor and workforce data.\*
- 7) Develop a list summarizing fundamental agribusiness skills, including but not limited to:
  - a. Leadership roles
  - b. Types of organizational structures
  - c. Importance of teamwork
  - d. Roles of communication
  - e. Principles of recordkeeping
  - f. Basic public speaking skills

### Introduction to Agricultural Mechanics

- 8) Examine the impact of the agricultural mechanics industry on United States society and the economy at large, addressing technological developments and career options. Produce an

informational essay or model (such as a timeline, graphic illustration, or presentation) to illustrate findings.

- 9) Demonstrate conceptual understanding of the following current practices in agricultural mechanics:
  - a. Calculate horsepower and explain its importance and uses
  - b. Explain the different types of power units
  - c. Explain the functions of basic hand and power tools
  - d. Demonstrate the safe use and maintenance of basic hand and power tools, including passing a safety test at 100 percent accuracy
  - e. Describe common building methods and materials used in the agricultural industry
  - f. Appropriately apply unit conversions and calculate acreage, length, and volumes

### **Introduction to Animal Science**

- 10) Investigate local and regional career opportunities in animal science, drawing on information from multiple print and digital resources such as local job postings and Tennessee labor and workforce data.\*
- 11) Compare and contrast small companion and large domesticated animals, synthesizing informational texts, graphic illustrations, and models to describe the following:
  - a. Their historical and contemporary roles in society and the agriculture industry specifically
  - b. The social and economic implications for maintaining animal health
  - c. Common domesticated breeds and their uses in society
- 12) Review illustrative models of major animal body systems (skeletal, muscular, respiratory, digestive, nervous, integumentary, urinary, reproductive) in conjunction with technical information from scientific texts to establish a basic knowledge of animal anatomy and physiology.

### **Introduction to Environmental and Natural Resources Systems**

- 13) Compare and contrast information gathered from a variety of sources to identify local and regional career opportunities in environmental and natural resources systems. Use local job postings and Tennessee labor and workforce data.\*
- 14) Draw conclusions about the interrelationships among plants and animals, citing specific textual evidence to justify conclusions. Identify native wildlife species and describe their environmental and economic impacts in Tennessee, incorporating visual representations such as diagrams or models.
- 15) Explore the basic principles of soil science by analyzing soil structure and formations. Write recommendations for basic methods of soil conservation, citing evidence from news articles, academic journals or agriculture texts.

- 16) Analyze visual representations (charts, diagrams, tables) to summarize important connections and distinctions concerning the flow of energy in ecosystems.
- 17) Identify the types of pollution found in air and water. Citing evidence from academic journals and news articles, determine pollution sources and the general effects of pollutants on the environment.

### **Introduction to Horticulture**

- 18) Compare and contrast information gathered from a variety of sources to identify local and regional career opportunities in horticulture using local job postings and Tennessee labor and workforce data.\*
- 19) Examine illustrative models of plants to differentiate basic plant structures. Describe how form and function of structures are related. Explain components and processes involved in plant reproduction and growth.
- 20) Analyze the relationship between soil quality and plant health and growth, including impact of pH, organic matter content, and mineral content.
- 21) Describe the general characteristics of common plants used in food production, greenhouse, landscaping, and turfgrass applications.
- 22) Explore basic concepts of sustainable agriculture by researching general principles of aquaculture and hydroponics. Citing relevant research, write an informative essay detailing sustainable practices in aquaculture and hydroponics and their contributions to society.

### **Implementation Notes**

#### **Implementation options for eighth grade**

\*Marked areas to be taught in nine-week rotation format.

#### **Implementation options for seventh grade**

Depending on the needs of faculty and students, seventh grade instructors may elect to follow the implementation suggestion for the eighth grade nine-week rotation format. Seventh grade instructors may also choose to concentrate on specific content areas that have unique connections to their district or region, which can provide for a more relevant, customized experience for students.

### **Standards Alignment Notes**

References to other standards include:

- SAE: [Supervised Agricultural Experience](#): All Agriculture students are encouraged to participate in a Supervised Agricultural Experience program to practice and demonstrate the knowledge and skills learned in their agriculture courses.

- AFNR: [National Agriculture, Food, & Natural Resources \(AFNR\) Career Cluster Content Standards:](#)
  - Note: While not directly aligned to one specific standard, students engaged in activities outlined above should be able to demonstrate fluency in Standards AS.01 and PS.01 at the conclusion of the course.
- P21: Partnership for 21st Century Skills [Framework for 21st Century Learning](#)
  - Note: While not all standards are specifically aligned, teachers will find the framework helpful for setting expectations for student behavior in their classroom and practicing specific career readiness skills.