

Scope & Sequence

Course Name: Principles of Agriculture, Food, and Natural Resources TSDS PEIMS Code: 13000200		Course Credit: 1.0 Course Requirements: This course is recommended for students in grades 9 – 12. Prerequisites: None.
Course Description: Principles of Agriculture, Food, and Natural Resources will allow students to develop knowledge and skills regarding career and educational opportunities, personal development, globalization, industry standards, details, practices, and expectations.		
NOTE: This is a suggested scope and sequence for the course content. This content will work with any textbook or instructional materials. If locally adapted, make sure all TEKS are covered.		
Total Number of Periods Total Number of Minutes Total Number of Hours	175 Periods 7,875 Minutes 131.25 Hours*	*Schedule calculations based on 175/180 calendar days. For 0.5 credit courses, schedule is calculated out of 88/90 days. Scope and sequence allows additional time for guest speakers, student presentations, field trips, remediation, extended learning activities, etc.
Unit Number, Title, and Brief Description	# of Class Periods* (assumes 45-minute periods) Total minutes per unit	TEKS Covered 130.2 Knowledge and skills

<p>Unit 1: Exploring Agriculture, Food, and Natural Resources</p> <p>Students will define and describe the branches of the agriculture industry. During this unit students will expand their technical vocabulary and knowledge about the agriculture, food, and natural resources (AFNR) industry. Students will understand how the AFNR industry supports the three basic human needs and sources for food, clothing, and shelter. Students will identify major agricultural milestones or inventions and analyzes their impact on modern life and AFNR.</p>	<p>15 Periods 675 Minutes</p>	<p>4. The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:</p> <ul style="list-style-type: none"> (A) define the scope of agriculture; (B) analyze the scope of agriculture, food, and natural resources and its effect upon society; (C) evaluate significant historical and current agriculture, food, and natural resources developments; (F) compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment, and animal welfare issues
<p>Unit 2: Supervised Agricultural Experience Program (SAEP) in Livestock Production</p> <p>Students will continually work on a SAEP throughout this course. The program is aimed to help prepare additional opportunities to learn, reinforce, apply, and transfer their knowledge and skills in a real-world setting. Students will plan, propose, conduct, document and evaluate a SAEP pertaining to either entrepreneurship, placement, exploration, research (either experimental or analytical), improvement, supplemental or other identified topic as an experiential learning activity.</p>	<p>15 Periods 675 Minutes</p>	<p>2. The student develops a supervised agriculture experience program. The student is expected to:</p> <ul style="list-style-type: none"> (A) plan, propose, conduct, document, and evaluate a supervised agriculture experience program as an experiential learning activity; (B) apply proper record-keeping skills as they relate to the supervised agriculture experience

<p>Unit 3: Community Service and Leadership Development</p> <p>During this unit, students will learn more about the qualities and characteristics required to be successful in business and industry. While a basic understanding and development of employability skills will help students obtain employment, they will learn that developing leadership skills will aid them in job retention and potential promotion opportunities. As a part of their Supervised Agriculture Experience Program (SAEP) students will participate in youth leadership opportunities, such as FFA, and implement/participate in local activities in their community. Leadership activities will develop students' level of responsibility, citizenship, and cooperation.</p>	<p>10 Periods 450 Minutes</p>	<p>2. The student develops a supervised agriculture experience program. The student is expected to:</p> <ul style="list-style-type: none"> (C) participate in youth leadership opportunities to create a well-rounded experience program; and (D) produce and participate in a local program of activities using a strategic planning process <p>5. The student analyzes the structure of agriculture, food, and natural resources leadership in organizations. The student is expected to:</p> <ul style="list-style-type: none"> (A) develop and demonstrate leadership skills and collaborate with others to accomplish organizational goals and objectives; (B) develop and demonstrate personal growth skills and collaborate with others to accomplish organizational goals and objectives; and (C) demonstrate democratic principles in conducting effective meetings
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<p>Unit 4: Soil Systems</p> <p>Students will describe soil formation and management and assess its relevance to plant/animal production and natural resources management. Students will be able to differentiate between soil components and describe the properties and composition of soil. Students will explain the importance of soil ecosystems.</p>	<p>10 Periods 450 Minutes</p>	<p>10. The student develops technical knowledge and skills related to soil systems. The student is expected to:</p> <ul style="list-style-type: none"> (A) identify the components and properties of soils; (B) identify and describe the process of soil formation; and (C) conduct experiments related to soil chemistry
<p>Unit 5: Plant Systems</p> <p>Students will label the major parts of the plant and explain functions of each plant part. Students will explain and demonstrate basic plant science principles including plant health, growth and reproduction. Explain the roles of essential plant nutrients for plant growth and reproduction. Students will examine the interrelationship between the soil, the atmosphere, the plant, and the animal as a part of a cycle in which the same materials are used over and over again.</p>	<p>10 Periods 450 Minutes</p>	<p>11. The student develops technical knowledge and skills related to plant systems. The student is expected to:</p> <ul style="list-style-type: none"> (A) describe the structure and functions of plant parts; (B) discuss and apply plant germination, growth, and development; (C) describe plant reproduction, genetics, and breeding; (D) identify plants of importance to agriculture, food, and natural resources; and (E) use tools, equipment, and personal protective equipment common to plant systems

<p>Unit 6: Animal Systems</p> <p>Students will learn the anatomy and physiological systems/functions related to livestock. Students will analyze the role, importance, and scope of the dairy, beef, pork, poultry, equine, and small ruminant animal industries in modern agriculture. Students will identify and describe major breeds within each livestock segment. Students will learn about genes and how they affect important traits such as growth, reproduction, disease resistance, and behavior.</p>	<p>10 Periods 450 Minutes</p>	<p>12. The student develops technical knowledge and skills related to animal systems. The student is expected to:</p> <ul style="list-style-type: none"> (A) describe animal growth and development; (B) identify animal anatomy and physiology; (C) identify and evaluate breeds and classes of livestock; and (D) explain animal selection, reproduction, breeding, and genetics
<p>Unit 7: Food Products and Processing</p> <p>Students will learn the principles of science to food processing to provide a safe, wholesome and nutritious food supply. Students will identify and explain the purpose of industry organizations, groups and regulatory agencies that influence local and global food quality and food safety. Students will explain the scope of the food industry and the historical and current developments of food product and processing. Students will evaluate the significance and implications of changes and trends in the food products and processing industry in the local and global food systems.</p>	<p>10 Periods 450 Minutes</p>	<p>13. The student describes the principles of food products and processing systems. The student is expected to:</p> <ul style="list-style-type: none"> (A) evaluate food products and processing systems; (B) determine trends in world food production; (C) discuss current issues in food production; and (D) use tools, equipment, and personal protective equipment common to food products and processing systems

<p>Unit 8: Industry Regulations, Compliance, and Workplace Safety</p> <p>This unit will expose students to the important compliance, safety standards, and regulations that are implemented within this industry. Students will learn that such practices are in place to manage resources to minimize losses and liabilities to businesses in the industry. Students will determine the role of risk management in the AFNR industry including, but not limited to, discussions focusing on liability insurance, sanitation, OSHA regulations, emergency situations, health code, and security issues.</p>	<p>10 Periods 450 Minutes</p>	<p>1. The student demonstrates professional standards/employability skills as required by business and industry The student is expected to:</p> <ul style="list-style-type: none"> (C) demonstrate knowledge of personal and occupational safety, environmental regulations, and first-aid policy in the workplace; <p>15. The student explains the relationship between agriculture, food, and natural resources and the environment. The student is expected to:</p> <ul style="list-style-type: none"> (A) determine the effects of agriculture, food, and natural resources upon safety, health, and the environment; (B) identify regulations relating to safety, health, and environmental systems in agriculture, food, and natural resources; (C) identify and design methods to maintain and improve safety, health, and environmental systems in agriculture, food, and natural resources

<p>Unit 9: Power, Structural, and Technical System Skills</p> <p>Students will understand that power, structural, and technical systems workers apply knowledge of engineering, hydraulics, pneumatics, electronics, power, structures, and controls to the field of agriculture. Examine structural requirements and estimate project costs in order to create proposals that include materials lists, budgets, schedules, drawings and blueprints. Operate machinery and equipment while observing all safety precautions in AFNR settings.</p>	<p>15 Periods 675 Minutes</p>	<p>14. The student safely performs basic power, structural, and technical system skills in agricultural applications. The student is expected to:</p> <ul style="list-style-type: none"> (A) identify major areas of power, structural, and technical systems; (B) use safe and appropriate laboratory procedures and policies; (C) create proposals that include bill of materials, budget, schedule, drawings, and technical skills developed for basic power, structural, and technical system projects or structures; (D) identify building materials and fasteners; and (E) use tools, equipment, and personal protective equipment common to power, structural, and technical systems
<p>Unit 10: Alternative Energy and Conservation</p> <p>Students will learn about the principles of environmental science as it relates to agricultural production and sustainability. Students will identify agricultural commodities that can be converted to alternative energy sources. Students will analyze the efficiency of renewable energy sources such as wind, solar, and biofuels. 12.3 Students will compares and contrast current production practices such as organic, naturally raised systems, and conventional</p>	<p>10 Periods 450 Minutes</p>	<p>15. The student explains the relationship between agriculture, food, and natural resources and the environment. The student is expected to:</p> <ul style="list-style-type: none"> (D) research and analyze alternative energy sources that stem from or impact agriculture, food, and natural resources; and (E) evaluate energy and water conservation methods

<p>agricultural production with regard to their sustainability.</p>		
<p>Unit 11: The Future of Agriculture, Food, and Natural Resources</p> <p>Students will understand that feeding the future global population, which is necessary to increase living standards worldwide, will require a concerted effort. Students will explain that the high wastage and high consumption in the developed regions are major contributors to the total global demand while developing countries' have increased diet demands as populations increase in those regions. Students will learn that scientists are using new avenues of research and biotechnology stimulated by heightened public focus on diet, health, and food safety, as well as domestic and global issues.</p>	<p>15 Periods 675 Minutes</p>	<p>4. The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:</p> <ul style="list-style-type: none"> (D) identify potential future scenarios for agriculture, food, and natural resources systems, including global impacts; (E) describe how emerging technologies and globalization impacts agriculture, food, and natural resources <p>7. The student applies appropriate research methods to agriculture, food, and natural resources topics. The student is expected to:</p> <ul style="list-style-type: none"> (A) discuss major research and developments in the fields of agriculture, food, and natural resources; (B) use a variety of resources for research and development; and (C) describe scientific methods of research
<p>Unit 12: Technology in the Workplace</p> <p>During this unit, students will learn about the types of technology required to perform workplace tasks for the AFNR industry. Students will understand how computerized systems are integral to businesses' effectiveness and completing workplace tasks with accuracy and efficiency. Students will</p>	<p>10 Periods 225 Minutes</p>	<p>9. The student uses information technology tools to access, manage, integrate, and create information related to agriculture, food, and natural resources. The student is expected to:</p> <ul style="list-style-type: none"> (A) apply technology applications such as industry-relevant software and Internet applications; (B) use collaborative, groupware, and virtual meeting software; (C) analyze the benefits and limitations of emerging technology such as online mapping systems, drones, and robotics; and

<p>identify and describe trends in the use of technology in the AFNR industry including online mapping systems, drones, robotics, and other e-agriculture technologies.</p>		<p>(D) explain the benefits of computer-based and mobile application equipment in agriculture, food, and natural resources</p>
<p>Unit 13: The Business of Hospitality Services</p> <p>Throughout this unit, students will explore the application of business and marketing fundamentals in regards to the AFNR industry. Students will identify and describe factors that impact the profit margins for AFNR businesses. Students will practice conducting research and gathering data to research and problem solving pertaining to the AFNR industry. Students will develop a formal AFNR business plan including executive summary, market analysis, organization and management structure, service/product to be provided, marketing and sales, funding source(s), and financial projections.</p>	<p>10 Periods 450 Minutes</p>	<p>8. The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records. The student is expected to:</p> <ul style="list-style-type: none"> (A) develop a formal business plan; and (B) develop, maintain, and analyze records.

<p>Unit 14: Communication Skills</p> <p>This unit will enhance students' communication skills, focusing on learning the aspects of interpersonal communication skills required within the industry. Students will focus on verbal and nonverbal communication that occurs between employees, employers, customers, and/or clients within AFNR industry.</p>	<p>10 Periods 450 Minutes</p>	<p>6. The student demonstrates appropriate personal and communication skills. The student is expected to:</p> <ul style="list-style-type: none"> (A) demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and (B) demonstrate effective listening skills appropriate for formal and informal situations
<p>Unit 15: Career Development</p> <p>Students will identify interests, abilities, aptitudes, values, and personality traits as they relate to career planning, to develop a keen understanding of the value and benefit of work, and to differentiate between jobs and careers. This unit will help students better understand the various career opportunities within the AFNR industry. Students will develop a career plan designed to achieve their career goals within this industry. Students will demonstrate the importance of positive work ethics and soft skills in relation to educational and career success including, but not limited to, appearance, attendance, attitude, character, communication, cooperation, organizational skills, productivity, respect, honesty,</p>	<p>15 Periods 675 Minutes</p>	<p>1. The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:</p> <ul style="list-style-type: none"> (A) identify career development, education, and entrepreneurship opportunities in the field of agriculture, food, and natural resources; (B) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources; (D) analyze employers' expectations such as appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills; and (E) identify careers in agriculture, food, and natural resources with required aptitudes in science, technology, engineering, mathematics, language arts, and social studies



<p>motivation, creativity, leadership, critical thinking, risk-taking, flexibility, questioning, and problem-solving, and teamwork. Students will understand the professional ethics legal responsibilities pertaining to the animal systems industry.</p>		
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