



Statewide Framework Document for: 010000

Introduction to Agriculture, Food, and Natural Resources

Standards may be added to this document prior to submission but may not be removed from the framework to meet state credit equivalency requirements. Performance assessments and leadership alignment may be developed at the local level. In order to earn state approval, performance assessments must be submitted within this framework. **This course is eligible for one credit of lab science.** The Washington State Science Standards performance expectations for high school blend core ideas (Disciplinary Core Ideas, or DCIs) with scientific and engineering practices (SEPs) and crosscutting concepts (CCCs) to support students in developing usable knowledge that can be applied across the science disciplines. These courses are to be taught in a three-dimensional manner. The details about each performance expectation can be found at <u>Next Generation Science Standards</u>.

School District Name			
Course Title: Introduction to Agriculture, Food, and Natural Resources	Total Framework Hours: 180		
CIP Code: 010000	Date Last Modified: December 30, 2020		
Career Cluster: Agriculture, Food, and Natural Resources	Cluster Pathway: All Pathways		

Course Summary:

A course that focuses on the general principles and practice of agricultural research and production that may prepare individuals to apply this knowledge to the solution of practical agricultural problems. Includes instruction in basic animal, plant, and soil science; animal husbandry and plant cultivation; soil conservation; and agricultural operations such as farming, ranching, and agricultural business.

As with all agriculture courses, instruction and assessment in the Supervised Agriculture Experience (SAE) is a requirement. The Supervised Agriculture Experience includes placing a student in a position where he or she will learn the practices of entrepreneurship and the fundamentals of research and experimentation in the agricultural field. Participants in the SAE will conduct exploratory projects with the purpose of learning about and improving practices in their surroundings.

SAE.01. This course will include instruction in and Student involvement in Supervised Agriculture Experience Projects (SAE).

Eligible for Equivalent Credit in: Science	Total Number of Units: 7
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Performance Assessments: (Districts to complete for each unit)

Example assessments for this unit include:

It is expected that students:

- Determine if their basic needs are met after simulating the collection of resources during different situations.
- Develop and keep an Agriscience Notebook to record and store information.
- Interpret types of activities associated with agriculture from a case study about an agricultural entrepreneur.
- Research top commodities produced in the United States and determine costs of food to consumers.
- Explore educational and personal growth opportunities available through FFA membership.
- Compare types of dress and the role professional dress plays in success.
- Complete components of ten Career Development Events.
- Investigate the career opportunities available in agriculture.
- Classify careers according to categories in agriculture.
- Develop and maintain a career portfolio following a specific format.
- Evaluate personal characteristics, strengths, and weaknesses.
- Develop a Supervised Agricultural Experience (SAE) implementation plan.

Leadership Alignment: (Districts to complete for each unit)

Leadership alignment must include a unit specific project/activity that aligns with the 21st Century Leadership Skills.

Example:

- Students think creatively, manage goals and time, and be self-directed learners while planning and implementing their SAE project.
- Students access and evaluate information through the use of the animal science notebook to store information accessed in this course.
- Students work in groups to simulate life as a hunter-gather through the development of modern agriculture.
- Students share their findings with the class through an informal oral presentation.
- Students demonstrate self-direct learning as they independently develop an SAE project of interest and serve as managers of their own projects to produce a positive end result.
- Through teacher evaluation, the students gain flexibility as they are presented with positive praise, setbacks, and criticism while completing these projects.

Industry Standards and/or Competencies:

Agriculture, Food, and Natural Resources (AFNR) Standards

CS.01 Premier Leadership: Acquire the skills necessary to positively influence others.

CS.02. Personal Growth: Develop a skill set to enhance the positive evolution of the whole person.

CS.03. Career Success: Demonstrate those qualities, attributes and skills necessary to succeed in, or further prepare for, a chosen career while effectively contributing to society.

CS.05. Systems: Identify how key organizational structures and processes affect organizational performance and the quality of products and services.

CS.08. Technical Skills: Use tools, equipment, machinery and technology appropriate to work within areas related to AFNR.

NRS.01. Explain interrelationships between natural resources and humans necessary to conduct management activities in natural environments.

Science	Washington Science Standards (Next Generation Science Standards): HS-ESS3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity		
Science and Engineering Practice	Disciplinary Core Idea Crosscutting Concept		Crosscutting Concept
Analyzing and Interpreting Data Constructing Explanations and Designing Solutions		ESS3.A: Natural Resources	Cause and Effect

Unit 2: Communicating Today Total Learning Hours for Unit: 10)
Performance Assessments: (Districts to complete for each unit)	
Example assessments for this unit include:	
It is expected that students:	
 Demonstrate verbal and non-verbal forms of communication in a charades-like game. 	
Prepare and present a formal introduction.	
Prepare and present a formal introduction.	
 Practice effective public speaking characteristics. 	
Develop and present an informative speech.	
 Work collaboratively to complete team building challenges. 	
 Use proper parliamentary procedures to voice an opinion. 	
 Demonstrate the proper procedures for making a main motion and an amendment. 	
 Develop a Prezi[®] presentation about agricultural careers. 	
 Use group norming and teamwork skills while working in a group. 	
Leadership Alignment: (Districts to complete for each unit)	
Leadership alignment must include a unit specific project/activity that aligns with the 21 st Century Leadership Skills.	
Example:	
 Students participate in public speaking and parliamentary procedure. 	
 Students use both verbal and non-verbal forms of communication to work effectively with diverse teams. 	
 Students be responsible to others in order to create and deliver a group presentation of an agricultural industry. 	
• Students interact effectively with others in a group to create a mock town hall meeting to better help them utilize their knowledge of	
parliamentary procedure and debate.	
Industry Standards and/or Competencies:	
Agriculture, Food, and Natural Resources (AFNR) Standards	
CS.01. Performance Element: Premier Leadership: Acquire the skills necessary to positively influence others.	
CS.02. Performance Element: Personal Growth: Develop a skill set to enhance the positive evolution of the whole person.	

CS.03. Performance Element: Career Success: Demonstrate those qualities, attributes and skills necessary to succeed in, or further prepare for, a chosen career while effectively contributing to society.

CS.04. Performance Element: Systems: Examine roles within teams,	, work units, departm	ents, organizations	inter-organizational systems	, and the larger
environment				

Aligned Washington State Academic Standards			
Science	Washington Science Standards (Next Generation Science Standards):		
Science and Engineering Practice		Disciplinary Core Idea	Crosscutting Concept

Unit 3: The Science of Agriculture	Total Learning Hours for Unit: 30
Performance Assessments: (Districts to complete for each unit)	
Example assessments for this unit include:	
t is expected that students:	
 Identify and describe the uses of common laboratory equipment. 	
 Use equipment to collect data for an experiment. 	
 Work with their classmates to develop a list of ten safety rules to follow. 	
Locate and determine the purpose of emergency equipment items located in the classroom, labora	tory, and shop facilities.
 Follow written procedures to complete a laboratory exercise. 	
• Measure distance, volume, mass, temperature, and density using the appropriate tools and scale.	
 Use equipment to collect data for an experiment. 	
• Measure distance, volume, mass, temperature, and density using the appropriate tools and scale.	
 Use a minimum of four science processes to design an experiment. 	
 Determine if a substance is an acid or a base using LabQuest[®] and a pH sensor. 	
 Test the buffering ability of water and one additional substance. 	
 Conduct an inquiry lab on the effect of pH on plant health. 	
 Write a lab report based on findings of the inquiry lab. 	
Perform a skit to demonstrate the science processes used in the experiment, laboratory safety, and	group communication skills.
Conduct a sediment test to determine the particle sizes of the mineral matter and the presence of of the mineral matter and the presence of the pre	organic matter in a sample of soil.
 Investigate the effects organic matter has on soil porosity and soil air holding capacity. 	
 Conduct an investigation of soil deposition caused by water. 	
 Conduct tests to determine soil texture by feel. 	
Test soil permeability to understand the relationship between soil particle size and rate of water filt	ration.
 Determine the texture, structure, and color of each horizon within a soil profile. 	
 Play a game to simulate the journey of a drop of water through the water cycle. 	

- Write and illustrate a story about what they learned regarding the journey a drop of water takes through the water cycle.
- Conduct an experiment that models the flow of water over a landform.
- Determine the spread of pollution from point and nonpoint sources.
- Perform tests to determine water quality using the factors of temperature, pH, turbidity, dissolved oxygen, and total dissolved solids.
- Design an experiment determining the quality of drinking water and conduct the experiment to determine its validity.
- Write a lab report regarding their experimental findings.

Leadership Alignment: (Districts to complete for each unit)

Leadership alignment must include a unit specific project/activity that aligns with the 21st Century Leadership Skills.

Example:

- Students work creatively with others to develop and deliver a presentation on the processes of science.
- Students work in diverse, small groups to conduct experiments and analyze data.
- Students solve problems when testing pH and correcting the level of acidity. Students will work both independently and in groups to examine the world around us.
- Students work in small groups to develop a story and presentation depicting the water cycle. Through the utilization of their communication and leadership skills they teach the class a portion of the water cycle.
- Students evaluate themselves and their team mates on their abilities to work as a team towards accomplishing a task.
- Students make judgments and decisions on which quality standards to test when creating and conducting an experiment on drinking water.

Industry Standards and/or Competencies:

Agriculture, Food, and Natural Resources (AFNR) Standards -

CS.03. Performance Element: Career Success: Demonstrate those qualities, attributes and skills necessary to succeed in, or further prepare for, a chosen career while effectively contributing to society.

CS.07. Performance Element: Safety, Health, and Environmental: Demonstrate appropriate health and safety procedures for AFNR occupations.

CS.08. Performance Element: Technical Skills: Use tools, equipment, machinery and technology appropriate to work within areas related to AFNR.

CS.11. Performance Element: Scientific Inquiry: Utilize scientific inquiry as an investigative method.

NRS.01. Explain interrelationships between natural resources and humans necessary to conduct management activities in natural environments. NRS.02. Apply scientific principles to natural resource management activities.

PS.02. Prepare and implement a plant management plan that addresses the influence of environmental factors, nutrients, and soil on plant growth.

Science	 HS-PS1-1.Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms. HS-ESS3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity. HS-ESS3-2. Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios. HS-ESS3-3. Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
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H Sy H fc H m H t t So	 HS-ESS3-4 Evaluate or refine a technological solution that reduces impacts of human activities on natural systems. HS-ETS1-1 Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants. HS-ETS1-2 Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering. HS-ETS1-3 Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts 		
Science and Engineering Practice Disciplinary Core Idea		Crosscutting Concept	
Planning and Carrying Out Investigations Analyzing and Interpreting Data Obtaining, Evaluating, and Communicating Information Asking Questions and Defining Problems Developing and Using Models	ESS3.A: Natural Resources PS1. B Chemical Reactions ESS2.A Earth Materials and Systems ESS2.C The Roles of Water in Earth's Surface Processes	Cause and Effect Mechanism and Prediction Structure and Function Patterns	

Unit 4: Biology in Agriculture	Total Learning Hours for Unit: 40			
Performance Assessments: (Districts to complete for each unit)				
Example assessments for this unit include:				
It is expected that students:				
 Identify and label the parts of a cell including each cell organelle function. 				
 Determine the differences in structural parts between an animal and plant cell. 				
Demonstrate the correct use of a microscope in order to prepare a microscope slide and identify the	e nucleus of an onion cell.			
 Extract the DNA bundles from strawberry tissue for observation. 				
 Construct a DNA model and demonstrate how DNA replication happens in a cell. 				
 Identify differences in physical features of people and trace their family traits. 				
 Identify similarities in characteristics to trace family traits. 				
Use concept mapping software to organize thoughts.				
 Classify objects based on their physical characteristics. 				
Categorize animals by gender and species.				
Develop a flowchart to classify 20 different tools.				
 Use a dichotomous key to identify specimen based on physical features. 				
Simulate the flow of energy in an ecosystem.				
Conduct an experiment to determine the interdependence of plants and animals.				

- Complete a WebQuest researching an ecosystem.
- Develop a model and poster depicting the ecosystem they studied.
- Record key points of ecosystems presented by classmates.

Leadership Alignment: (Districts to complete for each unit)

Leadership alignment must include a unit specific project/activity that aligns with the 21st Century Leadership Skills.

Example:

- Students work in diverse, small groups to conduct experiments and analyze data.
- Students utilize and manage information related tools and specimens to apply technology effectively in order to create concept maps and flowcharts.
- Students work in diverse groups to develop a model and poster on an ecosystem in order to guide and lead others in a presentation which peers must record key elements of the ecosystem.

Industry Standards and/or Competencies:

Agriculture, Food, and Natural Resources (AFNR) Standards -

CS.04. Systems: Examine roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment.

CS.07. Performance Element: Safety, Health, and Environmental: Demonstrate appropriate health and safety procedures for AFNR occupations.

CS.08. Performance Element: Technical Skills: Use tools, equipment, machinery and technology appropriate to work within areas related to AFNR.

CS.11. Performance Element: Scientific Inquiry: Utilize scientific inquiry as an investigative method.

AS.02. Classify, evaluate, select, and manage animals based on anatomical and physiological characteristics.

NRS.01. Performance Element: Explain interrelationships between natural resources and humans necessary to conduct management activities in natural environments.

PS.01. Apply knowledge of plant classification, plant anatomy and plant physiology to the production and management of plants.

Aligned Washington State Academic Sta	ndards
	HS-LS1-1. Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells. HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. HS-LS1-3. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain
Science	 homeostasis. HS-LS1-4. Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms. HS-LS1-5. Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy. HS-LS1-6. Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.

	HS-LS food r in a ne HS-LS affect HS-LS factor HS-LS energ HS-LS amon HS-LS	 1-7. Use a model to illustrate that cellular respiration molecules and oxygen molecules are broken and the transfer of energy. 2-1. Use mathematical and/or computational representations capacity of ecosystems at different scales. 2-2. Use mathematical representations to support as affecting biodiversity and populations in ecosystem 2-3. Construct and revise an explanation based on or y in aerobic 2-4. Use mathematical representations to support of gorganisms in an ecosystem. 2-5. Develop a model to illustrate the role of photon and the biographere atmosphere by drage base. 	on is a chemical process whereby the bonds of e bonds in new compounds are formed resulting sentations to support explanations of factors that and revise explanations based on evidence about ms of different scales. evidence for the cycling of matter and flow of claims for the cycling of matter and flow of energy synthesis and cellular respiration in the cycling of
	 carbon among the biosphere, atmosphere, hydrosphere, and geosphere. HS-LS2-6. Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem. HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity. HS-LS2-8. Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce. HS-LS3-1. Ask questions to clarify relationships about the role of DNA and chromosomes in coding the 		
	HS-LS (1) ne mutat	3-2. Make and defend a claim based from parents t genetic combinations through meiosis, (2) viable ions caused by environmental factors. 3-3. Apply concepts of statistics and probability to	o offspring. nat inheritable genetic variations may result from: errors occurring during replication, and/or (3) explain the variation and distribution of expressed
	traits in a population.		
Science and Engineering Practice		Disciplinary Core Idea	Crosscutting Concept
Asking Questions and Defining Problems Analyzing and Interpreting Data Obtaining, Evaluating, and Communicating Information		LS1.A Structure and Function LS3.A Inheritance of Traits LS3.B Variation of Traits LS1.C Organization for Matter and Energy Flow in Organisms LS2A: Interdependent Relationship LS2B: Cycles of Matter and Energy Transfer in Ecosystems	Systems and System Models Structure and Function Patterns Cause and Effect Stability and Change

LS2.C Ecosystems Dynamics, Functions, and	
Resilience	

Unit 5: Plants and Animals	Total Learning Hours for Unit: 40			
Performance Assessments: (Districts to complete for each unit)				
Example assessments for this unit include:				
It is expected that students:				
 Document the plant and animal food products consumed in a twenty-four hour period. 				
 Determine the percentage of plant and animal food products they consume. 				
Conduct an experiment to determine bacterial levels of meat samples when refrigerated, stored	at room temperature, and cooked.			
Observe and record growth of bacterial cultures.				
Research the path a prepared food item takes from production to processing and present their f	indings to the class.			
 Solve a problem related to foodborne illness outbreak. 				
 Identify and sketch the four basic plant parts. 				
Describe the functions of plant parts.				
 Construct a model depicting the parts of a complete flower. 				
 Conduct a germination trial to determine the germination rate of bean seeds. 				
 Determine the presence of starch in plants that have received different light treatments. 				
 Collect data on the rate of respiration and photosynthesis of plant leaves. 	Collect data on the rate of respiration and photosynthesis of plant leaves.			
 Determine the relationship between water availability and turgor pressure. 				
Calculate growing degree days for two locations to determine crop maturity.				
Research plant macronutrients and record the functions in plants, deficiency symptoms, and sources for each.				
• Design and conduct an inquiry experiment on one environmental factor to investigate the optimal growth range for a plant.				
 Write a lab report and develop a presentation to report their findings from an inquiry experiment. 				
 Study and learn the basic anatomical parts of an animal. 				
 Develop a poster of the external anatomy of an animal that will be used to teach others. 				
Make decisions based on given priorities and criteria, and analyze objects as they compare ideal criteria.				
 Evaluate a class of market hogs based on specific priorities. 				
 Develop a concept map of the internal body systems and their relationships. 				
Research and identify the six essential nutrients and the functions of each.				
Classify feedstuffs according to their nutrient value.				
 Conduct an experiment to demonstrate the effect of insulation on maintaining body heat. 				
 Draw conclusions on the perceptions of stimuli based on observations of optical illusions. 				
Determine ethical options to form an opinion on the use of meat for human consumption and re	elated environmental impact issues.			
Leadership Alignment: (Districts to complete for each unit)				

Leadership alignment must include a unit specific project/activity that aligns with the 21st Century Leadership Skills. *Example:*

- Students work creatively with others in pairs to examine the steps it takes for commodities to get from the farm to their fork.
- Students work with partners to conduct a laboratory experiment on food safety.
- Students show responsibility to others when they present their findings to the class.

Industry Standards and/or Competencies:

Agriculture, Food, and Natural Resources (AFNR) Standards

CS.05. Systems: Identify how key organizational structures and processes affect organizational performance and the quality of products and services. CS.06. Performance Element: Examine the importance of health, safety, and environmental management systems in organizations and their importance to performance and regulatory compliance.

CS.07. Performance Element: Safety, Health, and Environmental: Demonstrate appropriate health and safety procedures for AFNR occupations.

CS.08. Performance Element: Technical Skills: Use tools, equipment, machinery and technology appropriate to work within areas related to AFNR.

CS.09. Technical Skills: Compare and contrast issues affecting the AFNR industry.

CS.11. Scientific Inquiry: Utilize scientific inquiry as an investigative method.

AS.01. Examine the components, historical development, global implications, and future trends of the animal systems industry.

AS.02. Classify, evaluate, select, and manage animals based on anatomical and physiological characteristics.

AS.03. Provide for the proper health care of animals.

AS.05. Evaluate and select animals based on scientific principles of animal production.

AS.08. Analyze environmental factors associated with animal production.

BS.02. Demonstrate laboratory skills as applied to biotechnology.

FPP.01. Examine components of the food industry and historical development of food products and processing..

PS.01. Apply knowledge of plant classification, plant anatomy and plant physiology to the production and management of plants.

PS.02. Prepare and implement a plant management plan that addresses the influence of environmental factors, nutrients, and soil on plant growth.

	Washington Science Standards (Next Generation Science Standards):	
	HS-LS1-1. Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells. HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that	
	provide specific functions within multicellular organisms.	
Science	HS-LS1-3. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.	
	HS-LS1-4. Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.	
	HS-LS1-5. Use a model to illustrate how photosynthesis transforms light energy into stored chemical	
	energy.	

	HS-LS1-6. Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules. HS-LS1-7. Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.		
Science and Engineering Practice		Disciplinary Core Idea	Crosscutting Concept
Asking Questions and Defining Problems Planning and Carrying Out Investigations Analyzing and Interpreting Data Constructing Explanations and Designing Solutions Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information Developing and Using Models		LS1.C Organization for Matter and Energy Flow in Organisms	Structure and Function Cause and Effect

Unit 6: Mechanics of Agriculture	Total Learning Hours for Unit: 20			
Performance Assessments: (Districts to complete for each unit)				
Example assessments for this unit include:				
It is expected that students:				
 Compare the combustion of two common fuels used for energy production. 				
Construct a solar energy system and compare the production of electricity under different light cor	nditions.			
• Develop an educational display that will describe an alternative energy source and the impact agriculture has on that source.				
Draw a map and write directions from the school to their home.				
 Write directions based on the map of another student. 				
 Describe parcels of land using the rectangular survey system and the metes and bounds system. 				
Use three points to triangulate a location.				
Determine latitude, longitude, and altitude using a GPS unit.				
 Collect soil data and record the GPS coordinates of each soil location. 				
 Use the Soil Web Survey to research information on each soil location. 				
Discuss issues pertaining to zoning and land use and present a persuasive debate at a mock town h	nall meeting.			
 Use English and metric measurement systems to determine the length of objects. 				
Convert fractions and decimals.				

- Use proportions to solve problems and determine dimensions of objects drawn to scale.
- Draw three-view plans of three-dimensional objects.
- Write step-by-step directions for a coast-to-coast trip and calculate mileage and fuel cost.
- Develop complete project plans for a birdhouse including researching the needs of the bird, designing, sketching, drawing, writing directions, and estimating a bill of materials.

Leadership Alignment: (Districts to complete for each unit)

Leadership alignment must include a unit specific project/activity that aligns with the 21st Century Leadership Skills.

Example:

- Students work in diverse, small groups to express the importance of safety in the Agriculture classroom.
- Students communicate effectively to share their opinion in a town hall meeting and make judgments and decisions on the land zoning issue.

Industry Standards and/or Competencies:

Agriculture, Food, and Natural Resources (AFNR) Standards

CS.01. Premier Leadership: Acquire the skills necessary to positively influence others.

CS.03. Career Success: Demonstrate those qualities, attributes and skills necessary to succeed in, or further prepare for, a chosen career while effectively contributing to society.

CS.05. Performance Element: Systems: Identify how key organizational structures and processes affect organizational performance and the quality of products and services

CS.06. Performance Element: Examine the importance of health, safety, and environmental management systems in organizations and their importance to performance and regulatory compliance.

CS.07. Performance Element: Safety, Health, and Environmental: Demonstrate appropriate health and safety procedures for AFNR occupations.

CS.08. Performance Element: Technical Skills: Use tools, equipment, machinery and technology appropriate to work within areas related to AFNR.

CS.09. Performance Element: Technical Skills: Compare and contrast issues affecting the AFNR industry.

CS.10. Performance Element: Technical Skills: Envision emerging technology and globalization to project its influence on widespread markets.

CS.11. Performance Element: Scientific Inquiry: Utilize scientific inquiry as an investigative method.

ESS.06. Performance Element: Use tools, equipment, machinery and technology to accomplish tasks in environmental service systems.

NRS.01. Performance Element: Explain interrelationships between natural resources and humans necessary to conduct management activities in natural environments

NRS.02. Performance Element: Apply scientific principles to natural resource management activities.

NRS.05. Performance Element: Use effective methods and venues to communicate natural resource processes to the public.

PST.01. Performance Element: Use physical science principles and engineering applications with power, structural and technical systems to solve problems and improve performance.

PST.02. Performance Element: Design, operate and maintain mechanical equipment, structures, biological systems, land treatment, power and technology.

PST.04. Performance Element: Plan, build and maintain agricultural structures.

PST.05. Performance Element: Apply technology principles in the use of agricultural technical systems

Science	HS-ESS3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity		
Science and Engineering Practice		Disciplinary Core Idea	Crosscutting Concept
Asking Questions and Defining Problems Developing and Using Models Planning and Carrying Out Investigations Analyzing and Interpreting Data Using Mathematics and Computational Thinking Engaging in Argument from Evidence		ESS3.A: Natural Resources ESS3.C Human Impacts on Earth Systems	Cause and Effect Mechanism and Prediction

Unit 7: Agriscience

Total Learning Hours for Unit: 30

Performance Assessments:

Performance assessments on the following topics may be developed at the local level. In order to earn approval at the state level, performance assessments must be submitted within this framework.

It is expected that students:

- Write a brief proposing a plan to be used at a presentation on solving world hunger.
- Write a vision statement and develop personal goals.
- Review work from the year and complete their Career Portfolio.

Leadership Alignment: (Districts to complete for each unit)

Leadership alignment must include a unit specific project/activity that aligns with the 21st Century Leadership Skills.

Example:

- Students work on an analysis problem on Solving World Hunger. They analyze media and prepare their own media product to present their solution to hunger. It is an accumulation of all of the knowledge they have gained in the course. They consider what they have learned about animal populations, reproduction, food products, agricultural careers and even agricultural mechanics to come up with a brief.
- Students finalize their Agriscience Portfolio for the year as evidence of managing goals and timelines. They act as self-direct learners when recording their SAE progress and preparing to give an end of the year report.

Industry Standards and/or Competencies:

Agriculture, Food, and Natural Resources (AFNR) Standards -

CS.01. Performance Element: Premier Leadership: Acquire the skills necessary to positively influence others.

CS.02. Performance Element: Personal Growth: Develop a skill set to enhance the positive evolution of the whole person.

CS.03. Performance Element: Career Success: Demonstrate those qualities, attributes and skills necessary to succeed in, or further prepare for, a chosen career while effectively contributing to society.

CS.09. Technical Skills: Compare and contrast issues affecting the AFNR industry.

Science	HS-ESS3-1.Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity. HS-LS4-6. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.		
Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept	