



Auburn School District CTE Framework

Course: Plants, Food & the World (CASE- AFNR)		Total Framework Hours up to: 180
CIP Code: 010601	<input checked="" type="checkbox"/> Exploratory <input type="checkbox"/> Preparatory	Date Last Modified: 1/15/15
Career Cluster:	Agriculture, Food, and Natural Resources	Cluster Pathway: All within the cluster

Outline

Unit 1 The Circles of Agricultural Education	15 hours
Unit 2 Communicating Today	15 hours
Unit 3 The Science of Agriculture	35 hours
Unit 4 The World Around Us	35 hours
Unit 5 Plants and Animals	40 hours
Unit 6 The Mechanics of Agriculture	30 hours
Unit 7 Looking Ahead	10 hours
TOTAL	180 HOURS

Unit 1 – The Circles of Agricultural Education

Hours: 15

Performance Assessment(s):

- 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 various 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.
- Utilize the Agriculture Experience Tracker (AET) online record keeping system to maintain accurate records on the SAE project.

Leadership Alignment:

Leadership activity embedded in curriculum and instruction through the National FFA Organization. Students will work in groups to simulate life as a hunter-gather through the development of modern agriculture. Students will have to share their findings with the class through an informal oral presentation. Students will develop a Supervised Agriculture Experience (SAE) and set goals for the year.

- 1.3 The student will demonstrate oral, interpersonal, written, and electronic communication and presentation skills and understands how to apply those skills.
- 1.5 The student will demonstrate self-advocacy skills by achieving planned, individual goals.
- 2.1 The student will communicate, participate, and advocate effectively in pairs, small groups, teams, and large groups in order to reach common goals.
- 2.2 The student will demonstrate knowledge of conflict resolution and challenge management.
- 2.3 The student will analyze the complex responsibilities of the leader and follower and demonstrate the ability to both lead and follow.

Standards and Competencies

Standards:
 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.05. Performance Element: Systems: Identify how key organizational structures and processes affect organizational performance and the quality of products and services.
 CS.08. Performance Element: Technical Skills: Use tools, equipment, machinery and technology appropriate to work within areas related to AFNR.
 ABS.03. Performance Element: Utilize record keeping to accomplish AFNR business objectives while complying with laws and regulations.
 NRS.01. Performance Element: Explain interrelationships between natural resources and humans necessary to conduct management activities in natural environments.

Competencies:

Lesson 1.1 Agriculture Everyday

- 1.1.1 Agriculture and natural resource systems provide the three basic human needs of food, clothing, and shelter.
- 1.1.2 Organization and record keeping are important to the success of an agricultural business.
- 1.1.3 Agriculture is a broad field of study that includes agriculture systems, natural resource management, science, business, communication, and leadership.
- 1.1.4 Production of agricultural commodities occurs within specific regions of the United States.

Lesson 1.2 Team FFA

- 1.2.1 The National FFA Organization offers members many opportunities to build necessary employment and life skills, such as leadership, personal character, and career options.
- 1.2.2 Career Development Events (CDE) expose students to numerous opportunities for academic application in agriculture.

Lesson 1.3 Finding Your Career Path

- 1.3.1 Career opportunities exist in agriculture for all levels of education in the areas of production, processing, marketing, and regulation.
- 1.3.2 Agriculture is a broad field that encompasses many employment areas and offers a wide array of career opportunities.
- 1.3.3 Employability skills, such as work ethic, timeliness, communication, and self-direction, are essential attributes for a successful career.
- 1.3.4 Supervised Agricultural Experiences (SAE) programs provide opportunities to explore potential career choices and develop professional career goals.

Aligned Washington State Standards

Educational Technology	2.1 Practice Safety: Demonstrate safe, legal and ethical behavior in the use of information and technology. 2.2.2 Use a variety of hardware to support learning.
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	2.3.1 Select and use common applications. 2.3.2 Select and use online applications.
Reading-CCSS	CCSS: English Language Arts Standards » Science & Technical Subjects » Grade 9-10 Integration of Knowledge and Ideas RST.9-10.7 – Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
Science-NGSS	<u>Science and Engineering Practices</u> 1. Asking questions and defining problems 4. Analyzing and interpreting data 5. Using mathematics and computational thinking
Social Studies	4. The student understands and applies knowledge of historical thinking, chronology, eras, turning points, major ideas, individuals, and themes in local, Washington State, tribal, United States, and world history in order to evaluate how history shapes the present and future. 4.1 Understands historical chronology.
Writing-CCSS	CCSS: English Language Arts Standards » Writing » Grade 9-10 Research to Build and Present Knowledge WHST.9-10.7 – Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. Range of Writing WHST.9-10.10 – Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Unit 2 – Communicating Today

Hours: 15

Performance Assessment(s):

- Demonstrate verbal and non-verbal forms of communication in a charades-like game.
- Prepare and present a formal introduction.
- Practice effective public speaking characteristics.
- Develop and present an informative speech.
- Write a vision statement and develop personal goals.
- 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 and present a group PowerPoint® presentation about agricultural careers to an audience.

Leadership Alignment:

Leadership activity embedded in curriculum and instruction through the National FFA Organization. Students will focus on their communication and leadership skills in this unit. Unit 2 is designed to help the student develop their communication skills and expand their knowledge of the National FFA Organization. Students will use both verbal and non-verbal forms of communication. Students will work in a group to create a mock town hall meeting to better help them utilize their knowledge of parliamentary procedure and debate.

- 1.3 The students will demonstrate oral, interpersonal, written, and electronic communication and presentation skills and understands how to apply those skills.
2.1 The student will communicate, participate, and advocate effectively in pairs, small groups, teams, and large groups in order to reach common goals.
2.2 The student will demonstrate knowledge of conflict resolution and challenge management.
2.3 The student will analyze the complex responsibilities of the leader and follower and demonstrate the ability to both lead and follow.
2.4 The student will demonstrate skills that assist in understanding and accepting responsibility to family, community, and business and industry.

- 2.5 The student will demonstrate a working knowledge of parliamentary procedure.
- 2.6 The student will use knowledge, build interest, guide and influence decisions, organize efforts, and involve members of a group to assure that a pre-planned group activity is completed.
- 2.7 The student will demonstrate the ability to train others to understand the established rules and expectations, rationale, and consequences and to follow those rules and expectations.
- 2.8 The student will demonstrate the ability to incorporate and utilize the principles of group dynamics in a variety of settings.
- 3.1 The student will analyze the roles and responsibilities of citizenship.
- 3.2 The student will demonstrate social responsibility in family, community, and business and industry.
- 3.3 The student will understand their role, participate in and evaluate community service and service learning activities.

Standards and Competencies

- 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, departments, organizations, inter-organizational systems, and the larger environment.
 - CS.05. Performance Element: Systems: Identify how key organizational structures and processes affect organizational performance and the quality of products and services.
 - 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.

Competencies:

Lesson 2.1 Listen to Me

- 2.1.1 People utilize multiple forms of verbal and nonverbal communication.
- 2.1.2 Voice and use of visual aids are tools used in communicating effectively.
- 2.1.3 Speeches may be informative, persuasive, or special occasion.
- 2.1.4 People develop goals in order to achieve their dreams.

Lesson 2.2 Let's Get Together

- 2.2.1 People utilize multiple forms of communication in their daily lives.
- 2.2.2 Parliamentary procedures are used to conduct orderly meetings.
- 2.2.3 Speaking and use of visual aids are tools used to communicate effectively.
- 2.2.4 Teamwork is essential when solving many problems and completing group tasks.

Aligned Washington State Standards

Educational Technology	2.1 Practice Safety: Demonstrate safe, legal and ethical behavior in the use of information and technology. 2.2.1 Develop skills to use technology effectively. 2.2.2 Use a variety of hardware to support learning. 2.3.1 Select and use common applications. 2.3.2 Select and use online applications.
Science	Science and Engineering Practices 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information
Writing-CCSS	CCSS: English Language Arts Standards » Writing » Grade 9-10

	<p>Text Types and Purposes WHST.9-10.2 – Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. WHST.9-10.2.A – Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. WHST.9-10.2.D – Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers.</p> <p>Production and Distribution of Writing WHST.9-10.4 – Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. WHST.9-10.5 – Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. WHST.9-10.6 – Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.</p> <p>Research to Build and Present Knowledge WHST.9-10.7 – Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.</p> <p>Range of Writing WHST.9-10.10 – Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.</p>
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Unit 3 – The Science of Agriculture	Hours: 35
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Performance Assessment(s):
<ul style="list-style-type: none"> • Identify and describe the uses of common laboratory equipment. • Measure distance, volume, mass, temperature, and density using the appropriate tools and scale. • Follow written procedures to complete a laboratory exercise. • Use equipment to collect data for an experiment. • Use a minimum of four science processes to design an experiment. • Perform a skit to demonstrate the science processes used in the experiment, laboratory safety, and group communication skills. • 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. • 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. • Prepare a microscope slide and identify the 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.
- Use 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 ten types of trees.

Leadership Alignment:

Leadership activity embedded in curriculum and instruction through the National FFA Organization. Students will work in small groups to conduct experiments and analyze data.

2.1 The student will communicate, participate, and advocate effectively in pairs, small groups, teams, and large groups in order to reach common goals.

Standards and Competencies

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.04. Performance Element: Systems: Examine roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment.
 CS.05. Performance Element: Systems: Identify how key organizational structures and processes affect organizational performance and the quality of products and services
 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. Performance Element: Classify, evaluate, select, and manage animals based on anatomical and physiological characteristics.
 PS.01. Performance Element: Apply knowledge of plant classification, plant anatomy and plant physiology to the production and management of plants.

Competencies:

Lesson 3.1 Agriscience Investigators

- 3.1.1 Laboratory equipment has specific uses in scientific experiments.
- 3.1.2 Reading and understanding laboratory procedures are essential to conducting a laboratory experiment safely.
- 3.1.3 Mass, volume, temperature, and density are common laboratory measurements.
- 3.1.4 Proper and accurate measurement is important for laboratory investigation.
- 3.1.5 Scientific method is a systematic process used to solve a problem.

Lesson 3.2 Principles of pH

- 3.2.1 The level of pH is used to determine the acidity and alkalinity of a substance.
- 3.2.2 The pH scale is 0-14 where 0 is extremely acidic, 7 is neutral, and 14 is extremely basic.
- 3.2.3 The level of pH affects the health and well-being of organisms.

Lesson 3.3 Totally Cellular

- 3.3.1 Animal and plant cells have many similarities, especially in regards to cell function; however, there are important structural differences between the two cell types.
- 3.3.2 The nucleus of an animal and a plant cell is important for several life sustaining processes, such as cell division and protein synthesis.
- 3.3.3 DNA is genetic material that combined with protein comprises the chromosomes found inside animal and plant cell nuclei.
- 3.3.4 Genes are a combination of DNA segments that define animal and plant physical appearance.
- 3.3.5 Offspring of animals and plants derive their genetic traits from both parents.

Lesson 3.4 The Order of Classification

- 3.4.1 Classification of people, places, and things is a basic skill used in daily life, scientific research, and the agricultural industry.
- 3.4.2 Objects can be classified based on their purpose, form, usefulness, and visual characteristics of anatomical or physiological similarities.
- 3.4.3 Dichotomous keys are a classification tool used to identify objects based on their physical features.

Aligned Washington State Standards

Educational Technology	<p>2.1 Practice Safety: Demonstrate safe, legal and ethical behavior in the use of information and technology.</p> <p>2.2.1 Develop skills to use technology effectively.</p> <p>2.2.2 Use a variety of hardware to support learning.</p> <p>2.3.1 Select and use common applications.</p> <p>2.3.2 Select and use online applications.</p>
Math-CCSS	<p>CCSS: Conceptual Category – Number and Quantity Quantities Reason quantitatively and use units to solve problems.</p> <p>CCSS: Conceptual Category – Algebra Seeing Structure in Expressions Write expressions in equivalent forms to solve problems. Arithmetic with Polynomials and Rational Expressions Perform arithmetic operations on polynomials.</p> <p>CCSS: Conceptual Category – Statistics and Probability Interpreting Categorical and Quantitative Data Summarize, represent, and interpret data on a single count or measurement variable. Making Inferences and Justifying Conclusions Make inferences and justify conclusions from sample surveys, experiments, and observational studies.</p>
Reading-CCSS	<p>CCSS: English Language Arts Standards » Science & Technical Subjects » Grade 9-10 Key Ideas and Details RST.9-10.3 – Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text. Range of Reading and Level of Text Complexity RST.9-10.10 – By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.</p>
Science-NGSS	<p>Disciplinary Core Ideas <u>Earth and Space Science</u> ESS2: Earth's Systems ESS2.A: Earth Materials and Systems ESS2.C: The Roles of Water in Earth's Surface Processes ESS3: Earth and Human Activity ESS3.A: Natural Resources ESS3.C: Human Impacts on Earth Systems <u>Physical Science</u> PS1.B: Chemical Reactions</p> <p>Science and Engineering Practices Asking Questions and Defining Problems</p>

	<p>Developing and Using Models Planning and Carrying Out Investigations Analyzing and Interpreting Data Obtaining, Evaluating, and Communicating Information</p> <p>Crosscutting Concepts Patterns Cause and Effect: Mechanism and Prediction Structure and Function</p> <p>Understandings about the Nature of Science Scientific Investigations Use a Variety of Methods Science Models, Laws, Mechanisms, & Theories Explain Natural Phenomena Science is a Way of Knowing Science is a Human Endeavor</p>
<p>Writing-CCSS</p>	<p>CCSS: English Language Arts Standards » Writing » Grade 9-10 Text Types and Purposes WHST.9-10.1 – Write arguments focused on discipline-specific content. WHST.9-10.1.A – Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence. WHST.9-10.1.B – Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns. WHST.9-10.1.D – Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. WHST.9-10.1.E – Provide a concluding statement or section that follows from or supports the argument presented. WHST.9-10.2 – Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. WHST.9-10.2.A – Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. WHST.9-10.2.B – Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. WHST.9-10.2.C – Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts. WHST.9-10.2.D – Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers. WHST.9-10.2.E – Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. WHST.9-10.2.F – Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic). Production and Distribution of Writing WHST.9-10.4 – Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. WHST.9-10.5 – Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. WHST.9-10.6 – Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking</p>

advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
 Research to Build and Present Knowledge
 WHST.9-10.7 – Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
 Range of Writing
 WHST.9-10.10 – Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Unit 4 – The World Around Us

Hours: 35

Performance Assessment(s):

- Conduct a sediment test to determine the particle sizes of the mineral matter and the presence of 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 filtration.
- 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.
- 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:

Leadership activity embedded in curriculum and instruction through the National FFA Organization.
 Students will work both independently and in groups to examine the world around us. Students will work in small groups to develop a story and presentation depicting the water cycle. Through the utilization of their communication and leadership skills they will teach the class a portion of the water cycle. Students will be asked to evaluate themselves and their team mates on their abilities to work as a team towards accomplishing a task.

1.3 The student will demonstrate oral, interpersonal, written, and electronic communication and presentation skills and understands how to apply those skills.
 1.4 The student will be involved in activities that require applying theory, problem-solving, and using critical and creative thinking skills while understanding outcomes of related decisions.
 1.5 The student will demonstrate self-advocacy skills by achieving planned, individual goals.

- 2.1 The student will communicate, participate, and advocate effectively in pairs, small groups, teams, and large groups in order to reach common goals.
- 2.2 The student will demonstrate knowledge of conflict resolution and challenge management.
- 2.3 The student will analyze the complex responsibilities of the leader and follower and demonstrate the ability to both lead and follow.
- 2.4 The student will demonstrate skills that assist in understanding and accepting responsibility to family, community, and business and industry.
- 2.6 The student will use knowledge, build interest, guide and influence decisions, organize efforts, and involve members of a group to assure that a pre-planned group activity is completed.
- 2.7 The student will demonstrate the ability to train others to understand the established rules and expectations, rationale, and consequences and to follow those rules and expectations.
- 2.8 The student will demonstrate the ability to incorporate and utilize the principles of group dynamics in a variety of settings.
- 3.7 The student will participate in the development of a program of work or strategic plan and will work to implement the organization's goals.

Standards and Competencies

- 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.
 - ESS.05. Performance Element: Examine the relationships between energy sources and 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.
 - PS.02 Performance Element: Prepare and implement a plant management plan that addresses the influence of environmental factors, nutrients, and soil on plant growth.

Competencies:

Lesson 4.1 Starting from the Ground Up

- 4.1.1 Mineral matter, air, water, and organic matter are found in different proportions within a soil and define soil quality.
- 4.1.2 Mineral soils consist of three different particle sizes, specifically sand, silt, and clay.
- 4.1.3 Geographical features and environmental factors influence the formation process of soils and impact soil quality.
- 4.1.4 Soil erosion results in the loss of quality top soil and is a concern in the study of mineral soils.

Lesson 4.2 The Whole Soil

- 4.2.1 Sand, silt, and clay are three sizes of mineral particles that comprise soil texture.
- 4.2.2 Soil structure and soil texture are elements that affect soil function.
- 4.2.3 The texture, structure, and color of each layer of soil within a profile are used to identify specific horizons.
- 4.2.4 Soils form in layers that have distinguishing characteristics from other layers in a soil profile.

Lesson 4.3 Water World

- 4.3.1 The water cycle is an example of a naturally occurring system in which the substance can change form and location.
- 4.3.2 Land topography influences the distribution of water and pollutants.
- 4.3.3 Water pollution is caused by point and non-point sources.
- 4.3.4 The quality of water sources, such as streams and drinking water, can be determined by measuring factors such as temperature, pH, turbidity, dissolved oxygen, and total dissolved solids.

Lesson 4.4 Living in Harmony

- 4.4.1 Ecosystems are an interaction between organisms and the environment in which the organisms live.
- 4.4.2 Energy flows from producers (plants) to consumers (animals).

4.4.3 Plants and animals depend on each other for survival.

Aligned Washington State Standards

Educational Technology	<p>2.1 Practice Safety: Demonstrate safe, legal and ethical behavior in the use of information and technology.</p> <p>2.2.1 Develop skills to use technology effectively.</p> <p>2.2.2 Use a variety of hardware to support learning.</p> <p>2.3.1 Select and use common applications.</p> <p>2.3.2 Select and use online applications.</p>
Math-CCSS	<p>CCSS: Conceptual Category – Number and Quantity Quantities Reason quantitatively and use units to solve problems.</p> <p>CCSS: Conceptual Category – Algebra Seeing Structure in Expressions Write expressions in equivalent forms to solve problems.</p>
Reading-CCSS	<p>CCSS: English Language Arts Standards » Science & Technical Subjects » Grade 9-10 Key Ideas and Details RST.9-10.1 – Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. RST.9-10.3 – Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text. Craft and Structure RST.9-10.4 – Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics. Integration of Knowledge and Ideas RST.9-10.7 – Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.</p>
Science-NGSS	<p>Disciplinary Core Ideas <u>Life Science</u> LS1: From Molecules to Organisms: Structures and Processes LS1.A: Structure and Function LS1.C: Organization for Matter and Energy Flow in Organisms LS2: Ecosystems: Interactions, Energy, and Dynamics LS2.A: Interdependent Relationships in Ecosystems LS2.B: Cycles of Matter and Energy Transfer in Ecosystems LS2.C: Ecosystem Dynamics, Functioning, and Resilience LS3: Heredity: Inheritance and Variation of Traits LS3.A: Inheritance of Traits LS3.B: Variation of Traits</p> <p>Science and Engineering Practices</p>

	<p>Asking Questions and Defining Problems Analyzing and Interpreting Data Obtaining, Evaluating, and Communicating Information</p> <p>Crosscutting Concepts Patterns Cause and Effect: Mechanism and Prediction Scale, Proportion, and Quantity Systems and System Models Energy and Matter: Flows, Cycles, and Conservation Structure and Function Stability and Change</p> <p>Understandings about the Nature of Science Science is a Way of Knowing Scientific Knowledge Assumes Order & Consistency in Natural Systems</p>
<p>Writing-CCSS</p>	<p>CCSS: English Language Arts Standards » Writing » Grade 9-10 Text Types and Purposes WHST.9-10.2 – Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. WHST.9-10.2.A – Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. Production and Distribution of Writing WHST.9-10.4 – Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. WHST.9-10.6 – Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically. Research to Build and Present Knowledge WHST.9-10.7 – Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. WHST.9-10.9 – Draw evidence from informational texts to support analysis, reflection, and research. Range of Writing WHST.9-10.10 – Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.</p>
<p>Unit 5 – Plants and Animals Hours: 40</p>	
<p>Performance Assessment(s):</p>	
<ul style="list-style-type: none"> • 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 findings 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.
- 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.
- Make 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 related environmental impact issues.

Leadership Alignment:

Leadership activity embedded in curriculum and instruction through the National FFA Organization.

Students will work together in pairs in this unit to examine the steps it takes for commodities to get from the farm to their fork. Students will work with partners to conduct a laboratory experiment on food safety. Students will present their findings to the class.

1.3 The student will demonstrate oral, interpersonal, written, and electronic communication and presentation skills and understands how to apply those skills.

1.4 The student will be involved in activities that require applying theory, problem-solving, and using critical and creative thinking skills while understanding outcomes of related decisions.

2.1 The student will communicate, participate, and advocate effectively in pairs, small groups, teams, and large groups in order to reach common goals.

Standards and Competencies

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

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

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

- AS.03. Performance Element: Provide for the proper health care of animals.
- AS.05. Performance Element: Evaluate and select animals based on scientific principles of animal production.
- AS.08. Performance Element: Analyze environmental factors associated with animal production.
- BS.02. Performance Element: Demonstrate laboratory skills as applied to biotechnology.
- BS.03. Performance Element: Demonstrate the application of biotechnology to Agriculture, Food, and Natural Resources.
- FPP.01. Performance Element: Examine components of the food industry and historical development of food products and processing.
- FPP.02. Performance Element: Apply safety principles, recommended equipment and facility management techniques to the food products and processing industry.
- PS.01. Performance Element: Apply knowledge of plant classification, plant anatomy and plant physiology to the production and management of plants.

Competencies

Lesson 5.1 Edible Agriculture

- 5.1.1 Food is derived from animal and plant products.
- 5.1.2 Consumption trends of food have changed over time based on an increase of information about health issues and technological advances.
- 5.1.3 Food must be produced, transported, processed, and stored in a safe way.
- 5.1.4 There are many points where food can be contaminated while in route to the consumer.

Lesson 5.2 All About Plants

- 5.2.1 Plants have roots, stems, leaves, and flowers, which are all vital to survival.
- 5.2.2 Flowers, consisting of four main parts, produce seeds for reproduction.
- 5.2.3 Seeds require moisture and warmth for germination.
- 5.2.4 Plants convert raw materials using the energy of the sun into sugar and oxygen.
- 5.2.5 Plant cells use water, oxygen, and glucose to produce energy and metabolic by-products of carbon dioxide and water.

Lesson 5.3 Plant Needs

- 5.3.1 Production and management of plants are based upon environmental conditions, such as temperature.
- 5.3.2 Plants require adequate amounts of water for survival, growth, and development.
- 5.3.3 The three primary nutrients, nitrogen, phosphorus, and potassium, are necessary for the healthy growth of plants.

Lesson 5.4 Animals in Ag

- 5.4.1 Body parts of animals vary among different species.
- 5.4.2 Production and management of animals are based on anatomical and physiological characteristics.
- 5.4.3 Animals are selected based upon the quality and correctness of anatomical structure and productive potential.
- 5.4.4 Animals have a complex set of systems that must work together.

Lesson 5.5 Animal Care

- 5.5.1 Animals require food, shelter, and water for survival.
- 5.5.2 The nutrients needed by animals include protein, carbohydrates, fats, vitamins, minerals, and water and are found in many feed sources.
- 5.5.3 Shelter helps animals control body temperature.
- 5.5.4 Animals perceive potential dangers differently than humans.
- 5.5.5 The production of food, fiber, and fuel sometimes creates ethical dilemmas for producers and consumers.

Aligned Washington State Standards

Educational Technology	<ul style="list-style-type: none"> 2.1 Practice Safety: Demonstrate safe, legal and ethical behavior in the use of information and technology. 2.2.1 Develop skills to use technology effectively. 2.2.2 Use a variety of hardware to support learning. 2.3.1 Select and use common applications.
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	2.3.2 Select and use online applications.
Math-CCSS	<p>CCSS: Conceptual Category – Number and Quantity Quantities Reason quantitatively and use units to solve problems.</p> <p>CCSS: Conceptual Category – Algebra Seeing Structure in Expressions Write expressions in equivalent forms to solve problems. Reasoning with Equations and Inequalities Understand solving equations as a process of reasoning & explain the reasoning. Solve equations and inequalities in one variable.</p> <p>CCSS: Conceptual Category – Statistics and Probability Interpreting Categorical and Quantitative Data Summarize, represent, and interpret data on a single count or measurement variable. Making Inferences and Justifying Conclusions Make inferences and justify conclusions from sample surveys, experiments, and observational studies.</p>
Reading-CCSS	<p>CCSS: English Language Arts Standards » Science & Technical Subjects » Grade 9-10 Key Ideas and Details RST.9-10.2 – Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text. RST.9-10.3 – Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text. Craft and Structure RST.9-10.4 – Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics. RST.9-10.5 – Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy). Integration of Knowledge and Ideas RST.9-10.7 – Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words. Range of Reading and Level of Text Complexity RST.9-10.10 – By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.</p>
Science-NGSS	<p>Disciplinary Core Ideas <u>Life Science</u> LS1: From Molecules to Organisms: Structures and Processes LS1.B: Growth and Development of Organisms LS1.C: Organization for Matter and Energy Flow in Organisms</p> <p>Science and Engineering Practices Asking Questions and Defining Problems Developing and Using Models Planning and Carrying Out Investigations Analyzing and Interpreting Data Constructing Explanations and Designing Solutions Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information</p>

	<p>Crosscutting Concepts Cause and Effect: Mechanism and Prediction Structure and Function</p> <p>Understandings about the Nature of Science Scientific Investigations Use a Variety of Methods Science Addresses Questions About the Natural and Material World</p>
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<p>Writing-CCSS</p>	<p>CCSS: English Language Arts Standards » Writing » Grade 9-10 Text Types and Purposes WHST.9-10.1 – Write arguments focused on discipline-specific content. WHST.9-10.1.A – Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence. WHST.9-10.1.B – Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns. WHST.9-10.1.E – Provide a concluding statement or section that follows from or supports the argument presented. WHST.9-10.2 – Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. WHST.9-10.2.A – Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. WHST.9-10.2.F – Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic). Production and Distribution of Writing WHST.9-10.4 – Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. WHST.9-10.6 – Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically. Research to Build and Present Knowledge WHST.9-10.7 – Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. Range of Writing WHST.9-10.10 – Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.</p>
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<p>Unit 6 – Mechanics of Agriculture</p>	<p>Hours: 30</p>
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<p>Performance Assessment(s):</p>
<ul style="list-style-type: none"> • 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 shop facility. • Research an agricultural hazard and demonstrate safe procedures to reduce the danger. • Film a short video demonstrating safe behavior. • 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 conditions.

- 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 hall 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:

Leadership activity embedded in curriculum and instruction through the National FFA Organization.

Students will be focusing on the mechanical skills in Unit 6. They will be working in small groups to express the importance of safety in the Agriculture classroom. They will engage in group sharing and class collaboration activities.

1.3 The student will demonstrate oral, interpersonal, written, and electronic communication and presentation skills and understands how to apply those skills.

1.4 The student will be involved in activities that require applying theory, problem-solving, and using critical and creative thinking skills while understanding outcomes of related decisions.

2.1 The student will communicate, participate, and advocate effectively in pairs, small groups, teams, and large groups in order to reach common goals.

Standards and Competencies

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

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.

AS.07. Performance Element: Select animal facilities and equipment that provide for the safe and efficient production, housing, and handling of animals.

ESS.02. Performance Element: Assess the impact of policies and regulations on environmental service systems.

- ESS.05. Performance Element: Examine the relationships between energy sources and environmental service systems.
- 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.

Competencies:

Lesson 6.1 Safety Beyond the Classroom

- 6.1.1 Understanding and following shop procedures and rules are essential to maintaining a safe work environment.
- 6.1.2 Emergency equipment is available and has specific uses.
- 6.1.3 Machinery use requires proper knowledge and attention to keep a person safe.

Lesson 6.2 The Greening of Energy

- 6.2.1 People depend on consumable forms of energy, such as fuel and electricity, which are used in everyday life.
- 6.2.2 Agricultural commodities can be converted to alternative energy sources.
- 6.2.3 Many renewable energy sources, such as wind, solar, and biofuels, are currently being used in the United States.
- 6.2.4 The efficiency of energy and the amount of energy produced varies among sources.
- 6.2.5 The sustainable use of fossil fuels and renewable energy sources are the basis of many issues and concerns among consumer groups.

Lesson 6.3 This is My Land

- 6.3.1 All property is legally defined and recorded based on a standardized regulatory system.
- 6.3.2 There are federal, state, county, and local laws that govern how land can be used.
- 6.3.3 Global Positioning System (GPS) is a method used to determine an exact location of a point on the earth using a coordinate system based on longitude and latitude readings.
- 6.3.4 Applications of Global Positioning Systems and Geographic Information Systems are used in all disciplines of agriculture and natural resource systems to improve agricultural production efficiencies and environmental quality.

Lesson 6.4 How It's Made

- 6.4.1 English and metric linear measurement systems are two useful forms of measurement used every day.
- 6.4.2 Measurement accuracy is critical for project success.
- 6.4.3 The proper use of scale is important when drafting and designing project plans.
- 6.4.4 Agricultural projects involve planning, design, construction, implementation, and evaluation.

Aligned Washington State Standards

Educational Technology	<ul style="list-style-type: none"> 2.1 Practice Safety: Demonstrate safe, legal and ethical behavior in the use of information and technology. 2.2.1 Develop skills to use technology effectively. 2.2.2 Use a variety of hardware to support learning. 2.3.1 Select and use common applications. 2.3.2 Select and use online applications.
Math-CCSS	<ul style="list-style-type: none"> CCSS: Conceptual Category – Number and Quantity Quantities Reason quantitatively and use units to solve problems. CCSS: Conceptual Category – Algebra

	<p>Seeing Structure in Expressions Write expressions in equivalent forms to solve problems. Reasoning with Equations and Inequalities Understand solving equations as a process of reasoning & explain the reasoning. Solve equations and inequalities in one variable. CCSS: Conceptual Category – Geometry Geometric Measurement and Dimension Visualize relationships between two-dimensional and three-dimensional objects. Modeling with Geometry Apply geometric concepts in modeling situations.</p>
Reading-CCSS	<p>CCSS: English Language Arts Standards » Science & Technical Subjects » Grade 9-10 Key Ideas and Details RST.9-10.3 – Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text. Craft and Structure RST.9-10.4 – Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics. Integration of Knowledge and Ideas RST.9-10.7 – Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.</p>
Science-NGSS	<p>Disciplinary Core Ideas <u>Earth and Space Science</u> ESS3.A: Natural Resources ESS3.C: Human Impacts on Earth Systems</p> <p>Science and Engineering Practices 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 Obtaining, Evaluating, and Communicating Information</p> <p>Crosscutting Concepts Cause and Effect: Mechanism and Prediction</p> <p>Understandings about the Nature of Science Scientific Investigations Use a Variety of Methods Science Addresses Questions About the Natural and Material World</p>
Writing-CCSS	<p>CCSS: English Language Arts Standards » Writing » Grade 9-10 Text Types and Purposes WHST.9-10.1 – Write arguments focused on discipline-specific content. WHST.9-10.1.B – Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge</p>

	<p>level and concerns.</p> <p>WHST.9-10.1.E – Provide a concluding statement or section that follows from or supports the argument presented.</p> <p>WHST.9-10.2 – Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>WHST.9-10.2.A – Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.</p> <p>WHST.9-10.2.E – Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.</p> <p>WHST.9-10.2.F – Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).</p> <p>Production and Distribution of Writing</p> <p>WHST.9-10.4 – Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p>WHST.9-10.6 – Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.</p> <p>Research to Build and Present Knowledge</p> <p>WHST.9-10.7 – Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.</p> <p>WHST.9-10.8 – Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.</p> <p>Range of Writing</p> <p>WHST.9-10.10 – Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.</p>
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Unit 7 – Looking Ahead	Hours: 10
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Performance Assessment(s):

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

Leadership Alignment:

Leadership activity embedded in curriculum and instruction through the National FFA Organization.

Students will be working on an analysis problem on Solving World Hunger. It is an accumulation of all of the knowledge they have gained in the course. They should consider what they have learned about animal populations, reproduction, food products, agricultural careers and even agricultural mechanics to come up with a brief. Students will finalize their Agriscience Portfolio for the year. They should be recording their SAE progress and preparing to give an end of the year report.

1.3 The student will demonstrate oral, interpersonal, written, and electronic communication and presentation skills and understands how to apply those skills.

1.4 The student will be involved in activities that require applying theory, problem-solving, and using critical and creative thinking skills while understanding outcomes of related decisions.

3.1 The student will analyze the roles and responsibilities of citizenship.

3.2 The student will demonstrate social responsibility in family, community and business industry.

3.5 The student will understand and utilize organizational systems to advocate for issues on the local, state, and international level.

Standards and Competencies

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

Competencies

Lesson 7.1 Your Future in Agriscience

- 7.1.1 Agriculture plays an essential role in society and feeding the world.
- 7.1.2 Accurate record keeping is important to the success of an agricultural enterprise.

Aligned Washington State Standards

Reading-CCSS	CCSS: English Language Arts Standards » Science & Technical Subjects » Grade 9-10 Craft and Structure RST.9-10.4 – Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics. Integration of Knowledge and Ideas RST.9-10.9 – Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.
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Science-NGSS	<p>Disciplinary Core Ideas</p> <p><u>Life Science</u> LS2: Ecosystems: Interactions, Energy, and Dynamics LS2.A: Interdependent Relationships in Ecosystems</p> <p><u>Earth and Space Science</u> ESS3: Earth and Human Activity ESS3.A: Natural Resources ESS3.C: Human Impacts on Earth Systems</p> <p>Science and Engineering Practices Asking Questions and Defining Problems Obtaining, Evaluating, and Communicating Information</p> <p>Crosscutting Concepts Cause and Effect: Mechanism and Prediction Stability and Change</p> <p>Understandings about the Nature of Science Scientific Investigations Use a Variety of Methods Science Addresses Questions About the Natural and Material World</p>
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21st Century Skills

Check those that students will demonstrate in this course:

<p>LEARNING & INNOVATION</p> <p>Creativity and Innovation</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Think Creatively <input checked="" type="checkbox"/> Work Creatively with Others <input checked="" type="checkbox"/> Implement Innovations <p>Critical Thinking and Problem Solving</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Reason Effectively <input checked="" type="checkbox"/> Use Systems Thinking <input checked="" type="checkbox"/> Make Judgments and Decisions <input checked="" type="checkbox"/> Solve Problems <p>Communication and Collaboration</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Communicate Clearly <input checked="" type="checkbox"/> Collaborate with Others 	<p>INFORMATION, MEDIA & TECHNOLOGY SKILLS</p> <p>Information Literacy</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Access and /evaluate Information <input checked="" type="checkbox"/> Use and Manage Information <p>Media Literacy</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Analyze Media <input type="checkbox"/> Create Media Products <p>Information, Communications and Technology (ICT Literacy)</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Apply Technology Effectively 	<p>LIFE & CAREER SKILLS</p> <p>Flexibility and Adaptability</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Adapt to Change <input checked="" type="checkbox"/> Be Flexible <p>Initiative and Self-Direction</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Manage Goals and Time <input checked="" type="checkbox"/> Work Independently <input checked="" type="checkbox"/> Be Self-Directed Learners <p>Social and Cross-Cultural</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Interact Effectively with Others <input checked="" type="checkbox"/> Work Effectively in Diverse Teams <p>Productivity and Accountability</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Manage Projects <input checked="" type="checkbox"/> Produce Results <p>Leadership and Responsibility</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Guide and Lead Others <input checked="" type="checkbox"/> Be Responsible to Others
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