TEXAS FARM BUREAU®

National Ag in the Classroom Lesson Matrix
TEKS Alignment: 9th Grade – 12th Grade
***(Ctrl + click on the below lessons in the Table of Contents to view the alignment for each lesson)**

TABLE OF CONTENTS

A Search for the Source
A Tale of Two Burgers: Beef and Plant-Based Protein
Aeroponic Engineering and Vertical Farming
Agricultural Land Use
Agricultural Production Regions in the United States
Algaculture and Biofuel
Apples and the Science of Genetic Selection
Blue's the Clue: Souring Milk for Science
Bring Home the Blue, Not the Flu!
Carbon Hoofprints: Cows and Climate Change
Coliform Counts
Concentrate on the Solution
Cooking Right: The Science of Cooking a Hamburger
Design 'Y'er Genes
Double the Muscle: Probabilities and Pedigrees
Earth's Land and Soil Resources
Energy and Biofuels
Energy and the Commodity Trace-back
Enzymes and Bacteria are Whey Cool!
Fermentation of Honey
Fertilizers and the Environment
Filling the Global Grocery Bag
Find Your Future Career
Food Science: Bread Dough Challenge
From Boom to Dust
From Techniques to Traits
Geography and Climate for Agricultural Landscapes
Global Trade and Interdependence
GPS and GIS Technology in Agriculture
Growing a Nation Era 1b: Cotton's American Journey
Hen House Engineering
Honey as a Biomolecule
Journey 2050 Lesson 1: Introduction to Sustainable Agriculture
Journey 2050 Lesson 2: Plant Health

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Journey 2050 Lesson 3: Water
Journey 2050 Lesson 4: Economy
Journey 2050 Lesson 5: Land Use
Journey 2050 Lesson 6: Careers for 2050 and Beyond!
Journey 2050 Lesson 7: Technology and Innovations
Know Your Nitrogen
Lactose Lab: Some Don't Like it Sweet
Melons, Mitosis, and Meiosis
Methods of Crop Modification
My Agricultural Connections
Mystery Juice
One in a Million
Photoperiod Phenomena
Planet Zorcon
Plant-Soil Interactions
Plasmid Problem Solving
Populations
Properties of Soils
Say Cheese for Protein
Silky Genes
Soil and Sustainability
Strawberry Breeding and Genetics
The Green Revolution
The Science of GMOs
Tracing the Agricultural Supply Chain
What's Your pH?

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A SEARCH FOR THE SOURCE

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.36.c.4.G: evaluate details read to determine key ideas;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses

metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
- 110.37.c.4.G: evaluate details read to determine key ideas;

- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.38.c.4.G: evaluate details read to understand key ideas;
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;

- 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

▪ 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:

- 110.39.c.4.G: evaluate details read to analyze key ideas;

Mathematics – No Math TEKS

Social Studies

- United States History Studies Since 1877
  - 113.41.d.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
    - 113.41.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.E: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections between historical events over time;
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
  - 113.42.c.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:

        - 113.42.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
    - World Geography Studies
        - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
            - 113.43.d.21.D: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections over time;
            - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
    - Economics with Emphasis on the Free Enterprise System and Its Benefits
        - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
            - 113.31.d.21.A: analyze economic information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, and drawing inferences and conclusions;
            - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
        - 113.31.d.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
            - 113.31.d.23.

Science

- Biology
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models;

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.3: The student analyzes concepts related to global diversity. The student is expected to:
    - 130.2.c.3.a: compare and contrast global agricultural markets, currency, and trends; and
    - 130.2.c.3.b: evaluate marketing factors and practices that impact the global markets.
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;
    - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
    - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
  - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
    - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
    - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.

- Agribusiness Management and Marketing
  - 130.4.c.3: The student recognizes roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment. The student is expected to:
    - 130.4.c.3.b: demonstrate an understanding of the global context of agricultural industries and careers; and
- Advanced Animal Science
  - 130.10.c.6: The student demonstrates principles related to the human, scientific, and technological dimensions of animal agriculture and the resources necessary for producing domesticated animals. The student is expected to:
    - 130.10.c.6.b: identify animal products such as organic and farm-raised and consumption patterns relative to human diet and health issues; and
  - 130.10.c.15: The student explores methods of marketing livestock. The student is expected to:
    - 130.c.10.15.a: compare various methods of marketing livestock; and
- Forestry and Woodland Ecosystems
  - 130.18.c.7: The student describes the role of wood technology in forest product development. The student is expected to:
    - 130.18.c.7.a: compare timber manufacturing processes and products; and

A TALE OF TWO BURGERS: BEEF AND PLANT-BASED PROTEIN

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.C: give a presentation using informal, formal, and technical language effectively to meet the needs of audience, purpose, and occasion, employing eye contact, speaking rate such as pauses for effect, volume,

enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
- 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.

- 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.36.c.4.G: evaluate details read to determine key ideas;
  - 110.36.c.4.H: synthesize information from two texts to create new understanding;
- 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.36.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order
- 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.36.c.11.A: develop questions for formal and informal inquiry
  - 110.36.c.11.E: locate relevant sources
  - 110.36.c.11.F: synthesize information from a variety of sources
  - 110.36.c.11.G: examine sources for:
    - 110.36.c.11.G.i: credibility and bias, including omission
  - 110.36.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results

- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;

- 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
- 110.37.c.1.C: give a formal presentation that incorporates a clear thesis and a logical progression of valid evidence from reliable sources and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
- 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.

▪ 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
- 110.37.c.4.G: evaluate details read to determine key ideas;
- 110.37.c.4.H: synthesize information from multiple texts to create new understanding;

▪ 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
- 110.37.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;

▪ 110.37.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
- 110.37.c.11.A: develop questions for formal and informal inquiry;
- 110.37.c.11.E: locate relevant sources;
- 110.37.c.11.F: synthesize information from a variety of sources;
- 110.37.c.11.G: examine sources for:
  - 110.37.c.11.G.i: credibility and bias, including omission;
- 110.37.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

- English III

- 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
  - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
  - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
  - 110.38.c.1.C: give a formal presentation that exhibits a logical structure, smooth transitions, accurate evidence, well-chosen details, and rhetorical devices and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
  - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
- 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.38.c.4.G: evaluate details read to understand key ideas;
  - 110.38.c.4.H: synthesize information from a variety of text types to create new understanding
- 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.38.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order
- 110.38.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:

- 110.38.c.11.A: develop questions for formal and informal inquiry;
- 110.38.c.11.E: locate relevant sources;
- 110.38.c.11.F: synthesize information from a variety of sources;
- 110.38.c.11.G: examine sources for:
  - 110.38.c.11.G.i: credibility, bias, and accuracy
- 110.38.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.39.c.1.C: formulate sound arguments and present using elements of classical speeches such as introduction, first and second transitions, body, conclusion, the art of persuasion, rhetorical devices, employing eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.39.c.4.G: evaluate details read to analyze key ideas;
    - 110.39.c.4.H: synthesize information from a variety of text types to create new understanding;

- 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.39.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
- 110.39.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.39.c.11.A: develop questions for formal and informal inquiry;
  - 110.39.c.11.E: locate relevant sources;
  - 110.39.c.11.F: synthesize information from a variety of sources;
  - 110.39.c.11.G: examine sources for:
    - 110.39.c.11.G.i: credibility, bias, and accuracy
  - 110.39.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

Mathematics – No Math TEKS
Social Studies – No Social Studies TEKS
Science

- Environmental Systems
  - 112.50.c.12: Science concepts. The student understands how ethics and economic priorities influence environmental decisions. The student is expected to:
    - 112.50.c.12.C: analyze how ethical beliefs influence environmental scientific and engineering practices such as methods for food production, water distribution, energy production, and the extraction of minerals

Agriculture, Food, and Natural Resource

- Principles of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:

        - 130.2.c.4.a: define the scope of agriculture;
        - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
        - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
        - 130.2.c.4.e: describe how emerging technologies and globalization impacts agriculture, food, and natural resources; and
        - 130.2.c.4.f: compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment,
    - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
        - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
        - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
    - 130.2.c.13: The student describes the principles of food products and processing
        - 130.2.c.13.a: evaluate food products and processing systems;
        - 130.2.c.13.b: determine trends in world food production;
        - 130.2.c.13.c: discuss current issues in food production; and
- <u>Food Technology and Safety</u>
    - 130.15.c.3: The student explains the impact of food science systems. The student is expected to:
        - 130.15.c.3.a: explain the significance of food science systems;
        - 130.15.c.3.b: define trends in food production, world population, and supply and demand for food products;
        - 130.15.c.3.c: research trends in animal and food science research; and
    - 130.15.c.7: The student demonstrates an understanding of the trends and issues important to careers in the food science industry by comparing and contrasting issues affecting the food science industry, including biotechnology, employment, safety, environmental, and animal welfare issues. The student is expected to:

- 130.15.c.7.a: identify issues affecting food science;
- 130.15.c.7.b: research history and policies related to food science issues;
- 130.15.c.7.c: analyze and defend solutions for different environmental issues; and

▪ 130.15.c.8: The student describes the processing, packaging, quality analysis, and marketing of red meats and their by-products. The student is expected to:

- 130.15.c.8.e: identify methods of fabricating and marketing processed meats.

○ Food Processing

○ 130.16.c.3: The student knows the relationship of the food processing industry to the free enterprise system. The student is expected to:

- 130.16.c.3.b: explain trends in the consumption of food products.

▪ 130.16.c.4: The student understands consumer satisfaction issues. The student is expected to:

- 130.16.c.4.b: explain the factors that affect food palatability;

AEROPONIC ENGINEERING AND VERTICAL FARMING

English Language Arts and Reading

○ English I

▪ 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
- 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.

- 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.36.c.4.G: evaluate details read to determine key ideas;
  - 110.36.c.4.H: synthesize information from two texts to create new understanding;
- 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.36.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order
- 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.36.c.11.A: develop questions for formal and informal inquiry
  - 110.36.c.11.E: locate relevant sources
  - 110.36.c.11.F: synthesize information from a variety of sources
  - 110.36.c.11.G: examine sources for:
  - 110.36.c.11.G.i: credibility and bias, including omission
  - 110.36.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results

- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information,

developing a plan for consensus building, and setting ground rules for decision making.

- 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.37.c.4.G: evaluate details read to determine key ideas;

- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.38.c.4.G: evaluate details read to understand key ideas;
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a

speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
- 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
- 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

- 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.39.c.4.G: evaluate details read to analyze key ideas;

Math - No Math TEKS

Social Studies

- United States History Studies Since 1877
  - 113.41.d.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
    - 113.41.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
- World History Studies
  - 113.42.c.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
    - 113.42.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and

with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

Science

- Biology
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.42.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
    - 112.42.c.1.C: use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards
    - 112.42.c.1.D: use appropriate tools such as microscopes, slides, Petri dishes, laboratory glassware, metric rulers, digital balances, pipets, filter paper, micropipettes, gel electrophoresis and polymerase chain reaction (PCR) apparatuses, microcentrifuges, water baths, incubators, thermometers, hot plates, data collection probes, test tube holders, lab notebooks or journals, hand lenses, and models, diagrams, or samples of biological specimens or structures
    - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.42.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems

- 112.42.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
    - 112.42.c.2.A: identify advantages and limitations of models such as their size, properties, and materials
    - 112.42.c.2.B: analyze data by identifying significant statistical features, patterns, sources of error, and limitations
    - 112.42.c.2.C: use mathematical calculations to assess quantitative relationships in data
    - 112.42.c.2.D: evaluate experimental and engineering designs
- 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.42.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
    - 112.42.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
    - 112.42.c.3.C: engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence
- 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.42.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- 112.42.c.5: Biological Structures, Functions, and Processes: The student knows that biological structures at multiple levels of organization perform specific functions and processes that affect life. The student is expected to:

        - 112.42.c.5.B: compare and contrast prokaryotic and eukaryotic cells, including their complexity, and compare and contrast scientific explanations for cellular complexity
    - 112.42.c.10: Biological Evolution. The student knows evolutionary theory is a scientific explanation for the unity and diversity of life that has multiple mechanisms. The student is expected to:
        - 112.42.c.10.A: analyze and evaluate how natural selection produces change in populations and not in individuals
    - 112.42.c.11: Biological Structures, Functions, and Processes. Science concepts--biological structures, functions, and processes. The student knows the significance of matter cycling, energy flow, and enzymes in living organisms. The student is expected to:
        - 112.42.c.11.A: explain how matter is conserved and energy is transferred during photosynthesis and cellular respiration using models, including the chemical equations for these processes
    - 112.42.c.12: Science concepts--biological structures, functions, and processes. The student knows that multicellular organisms are composed of multiple systems that interact to perform complex functions. The student is expected to:
        - 112.42.c.12.A: analyze the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals
        - 112.42.c.12.B: explain how the interactions that occur among systems that perform functions of transport, reproduction, and response in plants are facilitated by their structures
- <u>Aquatic Science:</u>
    - 112.47.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:

- 112.47.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
- 112.47.c.1.B: apply scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
- 112.47.c.1.C: use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards
- 112.47.c.1.D: use appropriate tools such as Global Positioning System (GPS), Geographic Information System (GIS), weather balloons, buoys, water testing kits, meter sticks, metric rulers, pipettes, graduated cylinders, standard laboratory glassware, balances, timing devices, pH meters or probes, various data collecting probes, thermometers, calculators, computers, internet access, turbidity testing devices, hand magnifiers, work and disposable gloves, compasses, first aid kits, field guides, water quality test kits or probes, 30-meter tape measures, tarps, ripple tanks, trowels, screens, buckets, sediment samples equipment, cameras, flow meters, cast nets, kick nets, seines, computer models, spectrophotometers, stereomicroscopes, compound microscopes, clinometers, and field journals, various prepared slides, hand lenses, hot plates, Petri dishes, sampling nets, waders, leveling grade rods (Jason sticks), protractors, inclination and height distance calculators, samples of biological specimens or structures, core sampling equipment, fish tanks and associated supplies, and hydrometers; 112.47.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
- 112.47.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
- 112.47.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems

▪ 112.47.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify

features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:

- 112.47.c.2.A: identify advantages and limitations of models such as their size, properties, and materials
- 112.47.c.2.B: analyze data by identifying significant statistical features, patterns, sources of error, and limitations
- 112.47.c.2.C: use mathematical calculations to assess quantitative relationships in data
- 112.47.c.2.D: evaluate experimental and engineering designs

- 112.47.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
  - 112.47.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
  - 112.47.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
  - 112.47.c.3.C: engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence
- 112.47.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
  - 112.47.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- 112.47.c.6: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
  - 112.47.c.6.A: identify key features and characteristics of atmospheric, geological, hydrological, and biological systems as they relate to aquatic environments
  - 112.47.c.6.B: describe the interrelatedness of atmospheric, geological, hydrological, and biological

systems in aquatic ecosystems, including positive and negative feedback loops

- 112.47.c.7: Science Concept: The student knows about the interdependence and interactions that occur in aquatic environments. The student is expected to:
  - 112.47.c.7.C: identify variables that affect the solubility of carbon dioxide and oxygen in water
  - 112.47.c.7.D: evaluate factors affecting aquatic population cycles such as lunar cycles, temperature variations, hours of daylight, and predator-prey relationships
  - 112.47.c.7.E: identify the interdependence of organisms in an aquatic environment such as in a pond, a river, a lake, an ocean, or an aquifer and the biosphere
- 112.47.c.9: Science concepts. The student knows the role of cycles in an aquatic environment. The student is expected to:
  - 112.47.c.9.A: identify the role of carbon, nitrogen, water, and nutrient cycles in an aquatic environment, including upwellings and turnovers
  - 112.47.c.9.B: examine the interrelationships between aquatic systems and climate and weather, including El Niño and La Niña, currents, and hurricanes
- 112.47.c.14: Science concepts. The student understands how human activities impact aquatic environments. The student is expected to:
  - 112.47.c.14.A: analyze the cumulative impact of human population growth on an aquatic ecosystem

- <u>Environmental Systems:</u>
  - 112.50.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.50.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.50.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems

- 112.50.c.1.C: use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards
- 112.50.c.1.D: use appropriate tools such as meter sticks, metric rulers, pipettes, graduated cylinders, standard laboratory glassware, balances, timing devices, pH meters or probes, various data collecting probes, thermometers, calculators, computers, internet access, turbidity testing devices, hand magnifiers, work and disposable gloves, compasses, first aid kits, binoculars, field guides, water quality test kits or probes, soil test kits or probes, 30 meter tape measures, tarps, shovels, trowels, screens, buckets, rock and mineral samples equipment, air quality testing devices, cameras, flow meters, Global Positioning System (GPS) units, Geographic Information System (GIS) software, computer models, densiometers, spectrophotometers, stereomicroscopes, compound microscopes, clinometers, field journals, various prepared slides, hand lenses, hot plates, Petri dishes, sampling nets, waders, leveling grade rods (Jason sticks), protractors, inclination and height distance calculators, samples of biological specimens or structures, core sampling equipment, and kick nets
- 112.50.c.1.F: organize quantitative and qualitative data using probeware, spreadsheets, lab notebooks or journals, models, diagrams, graphs paper, computers, or cellphone applications;
- 112.50.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems

▪ 112.50.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:

- 112.50.c.2.A: identify advantages and limitations of models such as their size, properties, and materials
- 112.50.c.2.B: analyze data by identifying significant statistical features, patterns, sources of error, and limitations

    - 112.50.c.2.C: use mathematical calculations to assess quantitative relationships in data
    - 112.50.c.2.D: evaluate experimental and engineering designs
- 112.50.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.50.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
    - 112.50.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
    - 112.50.c.3.C: engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence
- 112.50.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.50.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- 112.50.c.6: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
    - 112.50.c.6.B: relate how water sources, management, and conservation affect water uses and quality
    - 112.50.c.6.C: document the use and conservation of both renewable and non-renewable resources as they pertain to sustainability
    - 112.50.c.6.D: identify how changes in limiting resources such as water, food, and energy affect local ecosystems
    - 112.50.c.6.E: analyze and evaluate the economic significance and interdependence of resources within the local environmental system
    - 112.50.c.6.F: evaluate the impact of waste management methods such as reduction, reuse, recycling, upcycling,

and composting on resource availability in the local environment

- 112.50.c.7: Science concepts. The student knows the sources and flow of energy through an environmental system. The student is expected to:
  - 112.50.c.7.A: describe the interactions between the components of the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere
- 112.50.c.10: Science concepts. The student knows how humans impact environmental systems through emissions and pollutants. The student is expected to:
  - 112.50.b.10.E: distinguish between the causes and effects of global warming and ozone depletion, including the causes, the chemicals involved, the atmospheric layer, the environmental effects, the human health effects, and the relevant
- 112.50.c.11: Science concepts. The student understands how individual and collective actions impact environmental systems. The student is expected to:
  - 112.50.c.11.B: evaluate the positive effects of human activities on the environment, including habitat restoration projects, species preservation efforts, nature conservancy groups, game and wildlife management, and ecotourism
  - 112.50.c.11.C: research the advantages and disadvantages of "going green" such as organic gardening and farming, natural methods of pest control, hydroponics, xeriscaping, energy-efficient homes and appliances, and hybrid cars
- 112.50.c.12: Science concepts. The student understands how ethics and economic priorities influence environmental decisions. The student is expected to:
  - 112.50.c.12.A: evaluate cost-benefit trade-offs of commercial activities such as municipal development, food production, deforestation, over-harvesting, mining, and use of renewable and non-renewable energy sources
  - 112.50.c.12.B: evaluate the economic impacts of individual actions on the environment such as overbuilding, habitat destruction, poaching, and improper waste disposal

- 112.50.c.12.C: analyze how ethical beliefs influence environmental scientific and engineering practices such as methods for food production, water distribution, energy production, and the extraction of minerals
- 112.50.c.12.D: discuss the impact of research and technology on social ethics and legal practices in situations such as the design of new buildings, recycling, or emission standards

▪ 112.50.c.13: Science concepts. The student knows how legislation mediates human impacts on the environment. The student is expected to:

- 112.50.c.13.A: describe past and present state and national legislation, including Texas automobile emissions regulations, the National Park Service Act, the Clean Air Act, the Clean Water Act, the Soil and Water Resources Conservation Act, and the Endangered Species Act

○ <u>Earth Systems:</u>

▪ 112.49.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:

- 112.49.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
- 112.49.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
- 112.49.c.1.C: use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards
- 112.49.c.1.D: use appropriate tools such as a drawing compass, magnetic compass, bar magnets, topographical and geological maps, satellite imagery and other remote sensing data, Geographic Information Systems (GIS), Global Positioning System (GPS), hand lenses, and fossil and rock sample kits;

- 112.49.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
- 112.49.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
- 112.49.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems

- 112.49.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
  - 112.49.c.2.A: identify advantages and limitations of models such as their size, properties, and materials
  - 112.49.c.2.B: analyze data by identifying significant statistical features, patterns, sources of error, and limitations
  - 112.49.c.2.C: use mathematical calculations to assess quantitative relationships in data
  - 112.49.c.2.D: evaluate experimental and engineering designs
- 112.49.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
  - 112.49.c.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
  - 112.49.c.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
  - 112.49.c.C: engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence
- 112.49.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
  - 112.49.c.C: research and explore resources such as museums, libraries, professional organizations, private

companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers

- 112.49.c.9: Science concepts. The student knows that the lithosphere continuously changes as a result of dynamic and complex interactions among Earth's systems. The student is expected to:
  - 112.49.c.9.D: evaluate how weather and human activity affect the location, quality, and supply of available freshwater resources
- 112.49.c.11: Science concepts. The student knows that dynamic and complex interactions among Earth's systems produce climate and weather. The student is expected to:
  - 112.49.c.11.C: model how greenhouse gases trap thermal energy near Earth's surface
  - 112.49.c.11.D: evaluate how the combination of multiple feedback loops alter global climate;
  - 112.49.c.11.F: explain how the transfer of thermal energy among the hydrosphere, lithosphere, and atmosphere influences weather
- 112.49.c.13: Science concepts. The student explores global policies and careers related to the life cycles of Earth's resources. The student is expected to:
  - 112.49.c.13.A: analyze the policies related to resources from discovery to disposal, including economics, health, technological advances, resource type, concentration and location, waste disposal and recycling, mitigation efforts, and environmental impacts

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
    - 130.2.c.1.e: identify careers in agriculture, food, and natural resources with required aptitudes in science,

technology, engineering, mathematics, language arts, and social studies.

- 130.2.c.3: The student analyzes concepts related to global diversity. The student is expected to:
  - 130.2.c.3.a: compare and contrast global agricultural markets, currency, and trends; and
  - 130.2.c.3.b: evaluate marketing factors and practices that impact the global markets.
- 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
  - 130.2.c.4.a: define the scope of agriculture;
  - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
  - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
  - 130.2.c.4.d: identify potential future scenarios for agriculture, food, and natural resources systems, including global impacts;
  - 130.2.c.4.e: describe how emerging technologies and globalization impacts agriculture, food, and natural resources; and
  - 130.2.c.4.f: compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment,
- 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
  - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
  - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
- 130.2.c.7: The student applies appropriate research methods to agriculture, food, and natural resources topics. The student is expected to:
  - 130.2.c.7.a: discuss major research and developments in the fields of agriculture, food, and natural resources;
  - 130.2.c.7.b: use a variety of resources for research and development; and
  - 130.2.c.7.c: describe scientific methods of research.

- 130.2.c.10: The student develops technical knowledge and skills related to soil systems. The student is expected to:
  - 130.2.c.10.a: identify the components and properties of soils;
- 130.2.c.11: The student develops technical knowledge and skills related to plant systems. The student is expected to:
  - 130.2.c.11.a: describe the structure and functions of plant parts;
  - 130.2.c.11.b: discuss and apply plant germination, growth, and development;
  - 130.2.c.11.d: identify plants of importance to agriculture, food, and natural resources; and
  - 130.2.c.11.e: use tools, equipment, and personal protective equipment common to plant systems.
- 130.2.c.13: The student describes the principles of food products and processing
  - 130.2.c.13.a: evaluate food products and processing systems;
  - 130.2.c.13.b: determine trends in world food production;
  - 130.2.c.13.c: discuss current issues in food production; and
  - 130.2.c.13.d: use tools, equipment, and personal protective equipment common to food products and processing systems.

- Horticulture
  - 130.23.c.3: The student develops technical skills associated with the management and production of horticultural plants. The student is expected to:
    - 130.23.c.3.b: manage the horticultural production environment;
    - 130.23.c.3.c: propagate and grow horticultural plants;
    - 130.23.c.3.f: describe the processes of fruit, nut, and vegetable production; and
  - 130.23.c.4: The student identifies structures and physiological processes used in plant production. The student is expected to:
    - 130.23.c.4.a: examine unique plant properties to identify and describe functional differences in plant structures, including roots, stems, flowers, leaves, and fruit;
    - 130.23.c.4.c: germinate seeds and transplant seedlings; and

- Advanced Plant and Soil Science
  - 130.25.c.3: The student uses scientific methods and equipment during laboratory and field investigations. The student is expected to:
    - 130.25.c.3.A: know the definition of science and understand that it has limitations, as specified in subsection (b)(4) of this section;
    - 130.25.c.3.B: know that hypotheses are tentative and testable statements that must be capable of being supported or not supported by observational evidence. Hypotheses of durable explanatory power that have been tested over a wide variety of conditions are incorporated into theories;
    - 130.25.c..3.C: know scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well-established and highly-reliable explanations, but they may be subject to change as new areas of science and new technologies are developed;
    - 130.25.c.3.D: distinguish between scientific hypotheses and scientific theories;
    - 130.25.c.3.E: plan and implement descriptive, comparative, and experimental investigations, including asking questions, formulating testable hypotheses, and selecting equipment and technology;
    - 130.25.c.3.F: collect and organize qualitative and quantitative data and make measurements with accuracy and precision using tools such as calculators, spreadsheet software, data-collecting probes, computers, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, electronic balances, analysis kits, sieve sets, sieve shakers, soil augers, soil moisture meters, hand lenses, Celsius thermometers, lab notebooks or journals, timing devices, cameras, Petri dishes, lab incubators, dissection equipment, meter sticks, and models, diagrams, or samples of biological specimens or structures;
    - 130.25.c.3.G: analyze, evaluate, make inferences, and predict trends from data; and

- 130.25.c.3.H: communicate valid conclusions supported by the data through methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.

- 130.25.c.7: The student develops scenarios for advances in plant and soil science. The student is expected to:
  - 130.25.c.7.a: design, conduct, and complete research in a laboratory or field investigation to solve problems in plant and soil science;

AGRICULTURAL LAND USE

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.C: give a presentation using informal, formal, and technical language effectively to meet the needs of audience, purpose, and occasion, employing eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.36.c.4.E: make connections to personal experiences, ideas in other texts, and society
    - 110.36.c.4.G: evaluate details read to determine key ideas:

        - 110.36.c.4.H: synthesize information from two texts to create new understanding;
    - 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
        - 110.36.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
        - 110.36.c.5.F: respond using acquired content and academic vocabulary as appropriate
    - 110.36.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
        - 110.36.c.9.A: plan a piece of writing appropriate for various purposes and audiences by generating ideas through a range of strategies such as brainstorming, journaling, reading, or discussing
    - 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
        - 110.36.c.11.E: locate relevant sources;
        - 110.36.c.11.F: synthesize information from a variety of sources;
        - 110.36.c.11.G: examine sources for:
        - 110.36.c.11.G.i: credibility and bias, including omission;
        - 110.36.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- English II
    - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
        - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
        - 110.37.c.1.C: give a formal presentation that incorporates a clear thesis and a logical progression of

valid evidence from reliable sources and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.37.c.4.E: make connections to personal experiences, ideas in other texts, and society;
    - 110.37.c.4.G: evaluate details read to determine key ideas:
    - 110.37.c.4.H: synthesize information from multiple texts to create new understanding;
- 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.37.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
    - 110.37.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- 110.37.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
    - 110.37.c.9.A: plan a piece of writing appropriate for various purposes and audiences by generating ideas through a range of strategies such as brainstorming, journaling, reading, or discussing;
- 110.37.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.37.c.11.E: locate relevant sources:
    - 110.37.c.11.F: synthesize information from a variety of sources;
    - 110.37.c.11.G: examine sources for:

        - 110.37.c.11.G.i: credibility and bias, including omission;
        - 110.37.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- English III
    - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
        - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
        - 110.38.c.1.C: give a formal presentation that exhibits a logical structure, smooth transitions, accurate evidence, well-chosen details, and rhetorical devices and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
        - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
    - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.38.c.4.E: make connections to personal experiences, ideas in other texts, and society;
        - 110.38.c.4.G: evaluate details read to understand key ideas;
        - 110.38.c.4.H: synthesize information from a variety of text types to create new understanding;
    - 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.38.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
- 110.38.c.5.F: respond using acquired content and academic vocabulary as appropriate;

- 110.38.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
  - 110.38.c.9.A: plan a piece of writing appropriate for various purposes and audiences by generating ideas through a range of strategies such as brainstorming, journaling, reading, or discussing;
- 110.38.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.38.c.11.E: locate relevant sources;
  - 110.38.c.11.F: synthesize information from a variety of sources;
  - 110.38.c.11.G: examine sources for:
  - 110.38.c.11.G.i: credibility, bias, and accuracy;
  - 110.38.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

- <u>English IV</u>
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.39.c.1.C: formulate sound arguments and present using elements of classical speeches such as introduction, first and second transitions, body, conclusion, the art of persuasion, rhetorical devices, employing eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and

- 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

- 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.39.c.4.E: make connections to personal experiences, ideas in other texts, and society;
  - 110.39.c.4.G: evaluate details read to analyze key ideas;
  - 110.39.c.4.H: synthesize information from a variety of text types to create new understanding;
- 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.39.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
  - 110.39.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- 110.39.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
  - 110.39.c.9.A: plan a piece of writing appropriate for various purposes and audiences by generating ideas through a range of strategies such as brainstorming, journaling, reading, or discussing;
- 110.39.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.39.c.11.E: locate relevant sources;
  - 110.39.c.11.F: synthesize information from a variety of sources;
  - 110.39.c.11.G: examine sources for:
  - 110.39.c.11.G.i: credibility, bias, and accuracy;
  - 110.39.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

TEXAS FARM BUREAU®

Science

- Aquatic Science
  - 112.47.c.14: Science concepts. The student understands how human activities impact aquatic environments. The student is expected to:
    - 112.47.c.14.B: predict effects of chemical, organic, physical, and thermal changes due to humans on the living and nonliving components of an aquatic ecosystem
- Biology
  - 112.42.c.1: Scientific processes. Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.B: use scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems
    - 112.42.c.1.D: use appropriate tools such as microscopes, slides, Petri dishes, laboratory glassware, metric rulers, digital balances, pipets, filter paper, micropipettes, gel electrophoresis and polymerase chain reaction (PCR) apparatuses, microcentrifuges, water baths, incubators, thermometers, hot plates, data collection probes, test tube holders, lab notebooks or journals, hand lenses, and models, diagrams, or samples of biological specimens or structures
    - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
  - 112.42.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence based arguments or evaluate designs. The student is expected to:

        - 112.42.c.2.B: analyze data by identifying significant statistical features, patterns, sources of error, and limitations
    - 112.42.c.3: Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
        - 112.42.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
- Environmental Systems
    - 112.50.c.6: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
        - 112.50.c.6.A: compare and contrast land use and management methods and how they affect land attributes such as fertility, productivity, economic value, and ecological stability
    - 112.50.c.10: Science concepts. The student knows how humans impact environmental systems through emissions and pollutants. The student is expected to:
        - 112.50.c.10.A: identify sources of emissions in air, soil, and water, including point and nonpoint sources

Mathematics – No Math TEKS

Social Studies

- United States History Since 1877
    - 113.41.c.12: Geography. The student understands the impact of geographic factors on major events. The student is expected to analyze the impact of physical and human geographic factors on the Klondike Gold Rush, the Panama Canal, the Dust Bowl, and the levee failure in New Orleans after Hurricane Katrina.

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
    - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;

- 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
  - 130.2.c.4.a: define the scope of agriculture;
  - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
  - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
  - 130.2.c.4.d: identify potential future scenarios for agriculture, food, and natural resources systems, including global impacts;
  - 130.2.c.4.f: compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment,
- 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
  - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
  - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
- 130.2.c.10: The student develops technical knowledge and skills related to soil systems. The student is expected to:
  - 130.2.c.10.a: identify the components and properties of soils;
  - 130.2.c.10.b: identify and describe the process of soil formation; and
  - 130.2.c.10.c: conduct experiments related to soil chemistry.
- 130.2.c.15: The student explains the relationship between agriculture, food, and natural resources and the environment. The student is expected to:
  - 130.2.c.15.a: determine the effects of agriculture, food, and natural resources upon safety, health, and the environment;
  - 130.2.c.15.c: identify and design methods to maintain and improve safety, health, and environmental systems in agriculture, food, and natural resources;

- 130.2.c.15.d: research and analyze alternative energy sources that stem from or impact agriculture, food, and natural resources; and
- 130.2.c.15.e: evaluate energy and water conservation methods.

- Energy and Natural Resource Technology
  - 130.11.c.5: The student identifies water use and management in agricultural settings. The student is expected to:
    - 130.11.c.5.c: discuss how agricultural uses may impact water resources;
    - 130.11.c.5.f: evaluate how the different agricultural water uses may impact water availability; and
  - 130.11.c.7: The student examines soil erosion as related to agricultural production. The student is expected to:
    - 130.11.c.7.a: identify agricultural production practices that can contribute to soil erosion;
    - 130.11.c.7.b: analyze effects of soil erosion;
    - 130.11.c.7.d: identify soil erosion control methods and programs.
- Advanced Energy and Natural Resource Technology
  - 130.12.c.10: The student examines soil erosion as related to natural resource management and energy production. The student is expected to:
    - 130.12.c.10.b: analyze the components and functions of soils;
    - 130.12.c.10.d: compare soil erosion control methods.
- Wildlife, Fisheries, and Ecology Management
  - 130.17.c.6: The student examines natural cycles and ecological concepts. The student is expected to:
    - 130.17.c.6.a: explain the hydrologic, nitrogen, carbon, and nutrient cycles;
    - 130.17.c.6.b: evaluate the impact of natural cycles on succession;
    - 130.17.c.6.c: analyze the effects of natural cycles on population dynamics;
- Range Ecology and Management
  - 130.19.c.5: The student analyzes the biotic and abiotic components of a rangeland. The student is expected to:
    - 130.19.c.5.a: discuss components of rangeland with an emphasis on soil;

        - 130.19.c.8: The student identifies methods of maintaining and improving rangeland for wildlife management. The student is expected to:
            - 130.19.c.8.b: identify plants species harmful to wildlife;
            - 130.19.c.8.c: analyze how wildlife species use range plants; and
    - Advanced Plant and Soil Science
        - 130.25.c.8: The student explains the relationship of biotic and abiotic factors within habitats and ecosystems. The student is expected to:
            - 130.25.c.8.c: evaluate the impact of human activity such as pest control, hydroponics, and sustainable agriculture on ecosystems; and
        - 130.25.c.9: The student analyzes soil science as it relates to food and fiber production. The student is expected to:
            - 130.25.c.9.c: recognize the importance of conservation of soil and agencies involved in conservation;
        - 130.25.c.10: The student describes the relationship between resources within environmental systems. The student is expected to:
            - 130.25.c.10.a: summarize methods of land use and management;
            - 130.25.c.10.b: identify sources, use, quality, and conservation of water;
            - 130.25.c.10.c: explore the use and conservation of renewable and non-renewable resources;

AGRICULTURAL PRODUCTION REGIONS IN THE UNITED STATES

English Language Arts and Reading

- English I
    - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
        - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.

- 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.36.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
  - 110.36.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.37.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
    - 110.37.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward

goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

- 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.38.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
  - 110.38.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.39.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
    - 110.39.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

Science

- Environmental Systems

        - 112.50.c.6: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
            - 112.50.c.6.A: compare and contrast land use and management methods and how they affect land attributes such as fertility, productivity, economic value, and ecological stability

Social studies

- United States History Since 1877
    - 113.41.c.26: Science, technology, and society. The student understands the impact of science, technology, and the free enterprise system on the economic development of the United States. The student is expected to:
        - 113.41.c.26.B: explain how specific needs result in scientific discoveries and technological innovations in agriculture, the military, and medicine; and
    - 113.41.c.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
        - 113.41.c.28.A: analyze primary and secondary sources such as maps, graphs, speeches, political cartoons, and artifacts to acquire information to answer historical questions;
- World Geography Studies
    - 113.43.c.11: Economics. The student understands how geography influences economic activities. The student is expected to:
        - 113.43.c.11.B: identify the factors affecting the location of different types of economic activities, including subsistence and commercial agriculture, manufacturing, and service industries; and

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
    - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;

- 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
  - 130.2.c.4.a: define the scope of agriculture;
  - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
  - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
- 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
  - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
  - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.

ALGACULTURE AND BIOFUEL

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.36.c.4.G: evaluate details read to determine key ideas;
  - 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:

        - 110.36.c.11.A: develop questions for formal and informal inquiry
        - 110.36.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results
- English II
    - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
        - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
        - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
    - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.37.c.4.G: evaluate details read to determine key ideas;
    - 110.37.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
        - 110.37.c.11.A: develop questions for formal and informal inquiry;
        - 110.37.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- English III
    - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;

        - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
        - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
    - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.38.c.4.G: evaluate details read to understand key ideas;
    - 110.38.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
        - 110.38.c.11.A: develop questions for formal and informal inquiry;
        - 110.38.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- English IV
    - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
        - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
        - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
    - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses

metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.39.c.4.G: evaluate details read to analyze key ideas;
- 110.39.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.39.c.11.A: develop questions for formal and informal inquiry;
    - 110.39.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

Math

- Algebra 1
    - 111.39.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
        - 111.39.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
        - 111.39.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
        - 111.39.c.1.E: create and use representations to organize, record, and communicate mathematical ideas;
- Mathematical Models with Applications
    - 111.43.c.9: Mathematical modeling in social sciences. The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences. The student is expected to:
        - 111.43.c.9.A: interpret information from various graphs, including line graphs, bar graphs, circle graphs, histograms, scatterplots, dot plots, stem-and-leaf plots, and box and whisker plots, to draw conclusions from the data and determine the strengths and weaknesses of conclusions;
- Advanced Quantitative Reasoning
    - 111.44.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
        - 111.44.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;

- 111.44.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
- 111.44.c.1.E: create and use representations to organize, record, and communicate mathematical ideas;

- Statistics
  - 111.47.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
    - 111.47.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
    - 111.47.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
    - 111.47.c.1.D: communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

Social Studies

- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- Economics with Emphasis on the Free Enterprise System and Its Benefits

- 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
  - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

Science

- Biology
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.42.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
    - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models;
    - 112.42.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
  - 112.42.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
    - 112.42.c.2.D: evaluate experimental and engineering designs
  - 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:

    - 112.42.c.**3.**A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
    - 112.42.c.**3.**B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
    - 112.42.c.**3.**C: engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence
- 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.42.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
- 112.42.c.5: Biological Structures, Functions, and Processes: The student knows that biological structures at multiple levels of organization perform specific functions and processes that affect life. The student is expected to:
    - 112.42.c.5.A: relate the functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids, to the structure and function of a cell
    - 112.42.c.5.B: compare and contrast prokaryotic and eukaryotic cells, including their complexity, and compare and contrast scientific explanations for cellular complexity
- 112.42.c.11: Biological Structures, Functions, and Processes. Science concepts--biological structures, functions, and processes. The student knows the significance of matter cycling, energy flow, and enzymes in living organisms. The student is expected to:
    - 112.42.c.11.A: explain how matter is conserved and energy is transferred during photosynthesis and cellular respiration using models, including the chemical equations for these processes
- 112.42.c.13: Interdependence Within Environmental Systems. The student knows that organisms have an organizational structure and variations can influence survival of populations. The student is expected to:

- 112.42.c.13.A: investigate and evaluate how ecological relationships, including predation, parasitism, commensalism, mutualism, and competition, influence ecosystem stability
- 112.42.c.13.B: analyze how ecosystem stability is affected by disruptions to the cycling of matter and flow of energy through trophic levels using models
- 112.42.c.13.C: explain the significance of the carbon and nitrogen cycles to ecosystem stability and analyze the consequences of disrupting these cycles
- 112.42.c.13.D: explain how environmental change, including change due to human activity, affects biodiversity and analyze how changes in biodiversity impact ecosystem stability

- Aquatic Science
  - 112.47.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.47.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.47.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
    - 112.47.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.47.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.47.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
  - 112.47.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:

        - 112.47.c.2.D: evaluate experimental and engineering designs
    - 112.47.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
        - 112.47.c.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
        - 112.47.c.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
        - 112.47.c.C: engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence
    - 112.47.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
        - 112.47.c.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
    - 112.47.c.9: Science concepts. The student knows the role of cycles in an aquatic environment. The student is expected to:
        - 112.47.c.9.A: identify the role of carbon, nitrogen, water, and nutrient cycles in an aquatic environment, including upwellings and turnovers
- <u>Environmental Systems</u>
    - 112.50.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.50.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.50.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems

    - 112.50.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.50.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.50.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
    - 112.50.c.1.H: distinguish among scientific hypotheses, theories, and laws
- 112.50.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
    - 112.50.c.2.D: evaluate experimental and engineering designs
- 112.50.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.50.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
    - 112.50.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
    - 112.50.c.3.C: engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence
- 112.50.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.50.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
- 112.50.c.5: Science concepts. The student knows the relationships of biotic and abiotic factors within habitats, ecosystems, and biomes. The student is expected to:

    - 112.50.c.5.B: explain the cycling of water, phosphorus, carbon, silicon, and nitrogen through ecosystems, including sinks, and the human interactions that alter these cycles using tools such as models
- 112.50.c.6: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
    - 112.50.c.6.C: document the use and conservation of both renewable and non-renewable resources as they pertain to sustainability
    - 112.50.c.6.E: analyze and evaluate the economic significance and interdependence of resources within the local environmental system
- 112.50.c.9: Science concepts. The student knows that environments change naturally. The student is expected to:
    - 112.50.c.9.E: analyze the impact of natural global climate change on ice caps, glaciers, ocean currents, and surface temperatures
- 112.50.c.10: Science concepts. The student knows how humans impact environmental systems through emissions and pollutants. The student is expected to:
    - 112.50.b.10.E: distinguish between the causes and effects of global warming and ozone depletion, including the causes, the chemicals involved, the atmospheric layer, the environmental effects, the human health effects, and the relevant wavelengths on the electromagnetic spectrum (IR and UV)
- 112.50.c.11: Science concepts. The student understands how individual and collective actions impact environmental systems. The student is expected to:
    - 112.50.c.11.A: evaluate the negative effects of human activities on the environment, including overhunting, overfishing, ecotourism, all-terrain vehicles, and personal watercraft
    - 112.50.c.11.B: evaluate the positive effects of human activities on the environment, including habitat restoration projects, species preservation efforts, nature conservancy groups, game and wildlife management, and ecotourism
    - 112.50.c.11.C: research the advantages and disadvantages of "going green" such as organic gardening and farming, natural methods of pest control,

hydroponics, xeriscaping, energy-efficient homes and appliances, and hybrid cars

- 112.50.c.12: Science concepts. The student understands how ethics and economic priorities influence environmental decisions. The student is expected to:
  - 112.50.c.12.A: evaluate cost-benefit trade-offs of commercial activities such as municipal development, food production, deforestation, over-harvesting, mining, and use of renewable and non-renewable energy sources
  - 112.50.c.12.C: analyze how ethical beliefs influence environmental scientific and engineering practices such as methods for food production, water distribution, energy production, and the extraction of minerals
  - 112.50.c.12.D: discuss the impact of research and technology on social ethics and legal practices in situations such as the design of new buildings, recycling, or emission standards
- 112.50.c.13: Science concepts. The student knows how legislation mediates human impacts on the environment. The student is expected to:
  - 112.50.c.13.A: describe past and present state and national legislation, including Texas automobile emissions regulations, the National Park Service Act, the Clean Air Act, the Clean Water Act, the Soil and Water Resources Conservation Act, and the Endangered Species Act
  - 112.50.c.13.B: evaluate the goals and effectiveness of past and present international agreements such as the environmental Antarctic Treaty System, the Montreal Protocol, the Kyoto Protocol, and the Paris Climate Accord

- Earth Systems Science
  - 112.49.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.49.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.49.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems

    - 112.49.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.49.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.49.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
- 112.49.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
    - 112.49.c.2.D: evaluate experimental and engineering designs
- 112.49.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.49.c.**3.**A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
    - 112.49.c.**3.**B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
    - 112.49.c.**3.**C: engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence
- 112.49.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.49.c.**4.**A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
- 112.49.c.12: Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:

- 112.49.c.12.E: predict how human use of Texas's naturally occurring resources such as fossil fuels, minerals, soil, solar energy, and wind energy directly and indirectly changes the cycling of matter and energy through Earth's systems

- 112.49.c.13: Science concepts. The student explores global policies and careers related to the life cycles of Earth's resources. The student is expected to:
  - 112.49.c.13.A: analyze the policies related to resources from discovery to disposal, including economics, health, technological advances, resource type, concentration and location, waste disposal and recycling, mitigation efforts, and environmental impacts
  - 112.49.c.13.B: explore global and Texas-based careers that involve the exploration, extraction, production, use, disposal, regulation, and protection of Earth's resources

Agriculture, Food, and Natural Resources

- Energy and Natural Resource Technology
  - 130.11.c.4: The student discusses the importance and scope of natural resources. The student is expected to:
    - 130.11.c.4.a: identify various types of natural resources;
    - 130.11.c.4.b: discuss renewable and non-renewable energy resources and their impact on the environment;
- Advanced Energy and Natural Resource Technology
  - 130.12.c.4: The student discusses the importance and scope of natural resources. The student is expected to:
    - 130.12.c.4.a: identify various types of natural resources;
    - 130.12.c.4.b: discuss renewable and non-renewable energy resources and their impact on the environment;
  - 130.12.c.12: The student learns the processes for producing energy and green products from agricultural, biomass, fossil fuel, wind, solar, and geothermal sources. The student is expected to:
    - 130.12.c.12.a: identify agricultural and silvicultural crops and bio-products suitable for renewable production;
    - 130.12.c.12.b: discuss production processes for agricultural- and silvicultural-based bio-products;
- Wildlife, Fisheries, and Natural Resources
  - 130.17.c.10: The student demonstrates concepts related to optimum production. The student is expected to:
    - 130.17.c.10.a: discuss the importance and progress of aquaculture as an emerging industry;

TEXAS FARM BUREAU®

APPLES AND THE SCIENCE OF GENETIC SELECTION

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.3: Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking--self-sustained reading. The student reads grade-appropriate texts independently. The student is expected to self-select text and read independently for a sustained period of time.
  - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.36.c.4.G: evaluate details read to determine key ideas;
  - 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.36.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;

        - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
    - 110.37.c.3: Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking--self-sustained reading. The student reads grade-appropriate texts independently. The student is expected to self-select text and read independently for a sustained period of time.
    - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.37.c.4.G: evaluate details read to determine key ideas;
    - 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
        - 110.37.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
- English III
    - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
        - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
    - 110.38.c.3: Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking--self-sustained reading. The student reads grade-appropriate texts

independently. The student is expected to self-select text and read independently for a sustained period of time.

- 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.38.c.4.G: evaluate details read to understand key ideas;
- 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.38.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;

- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.39.c.3: Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking--self-sustained reading. The student reads grade-appropriate texts independently. The student is expected to self-select text and read independently for a sustained period of time.
  - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.39.c.4.G: evaluate details read to analyze key ideas;

- 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.39.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;

Mathematics – No Math TEKS
Social Studies – No Social Studies TEKS
Science

- Biology
  - 112.42.c.10: The student knows evolutionary theory is a scientific explanation for the unity and diversity of life that has multiple mechanisms. The student is expected to:
    - 112.42.c.10.c: analyze and evaluate how natural selection may lead to speciation
- Integrated Physics and Chemistry
  - 112.44.c.7: Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:
    - 112.44.c.7.A: model basic atomic structure and relate an element's atomic structure to its bonding, reactivity, and placement on the Periodic Table

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;
    - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
    - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;

        - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
            - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
            - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
        - 130.2.c.11: The student develops technical knowledge and skills related to plant systems. The student is expected to:
            - 130.2.c.11.c: describe plant reproduction, genetics, and breeding;
            - 130.2.c.11.d: identify plants of importance to agriculture, food, and natural resources; and
    - Food Technology and Safety
        - 130.15.c.3: The student explains the impact of food science systems. The student is expected to:
            - 130.15.c.3.a: explain the significance of food science systems;
            - 130.15.c.3.b: define trends in food production, world population, and supply and demand for food products;
        - 130.15.c.10: The student describes the processing, packaging, quality analysis, and marketing of fruits, nuts, and vegetables and their by-products. The student is expected to:
            - 130.15.c.10.a: identify, classify, and grade fruits, nuts, and vegetables;
    - Horticulture Science
        - 130.23.c.3: The student develops technical skills associated with the management and production of horticultural plants. The student is expected to:
            - 130.23.c.3.f: describe the processes of fruit, nut, and vegetable production; and

BRING HOME THE BLUE, NOT THE FLU!

English Language Arts and Reading

- English I
    - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

        - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
        - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
        - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
    - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.36.c.4.G: evaluate details read to determine key ideas;
    - 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
        - 110.36.c.5.F: respond using acquired content and academic vocabulary as appropriate;

- <u>English II</u>
    - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
    - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.37.c.4.G: evaluate details read to determine key ideas;
    - 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

        - 110.37.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- English III
    - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
    - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.38.c.4.G: evaluate details read to understand key ideas;
    - 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
        - 110.38.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- English IV
    - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
    - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.39.c.4.G: evaluate details read to analyze key ideas;

- 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.39.c.5.F: respond using acquired content and academic vocabulary as appropriate;

Social Studies

- United States History Studies Since 1877
  - 113.41.d.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
    - 113.41.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
  - 113.42.c.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
    - 113.42.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:

- 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
  - 113.31.d.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

Math

- Algebra 1
  - 111.39.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
    - 111.39.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
    - 111.39.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
    - 111.39.c.1.E: create and use representations to organize, record, and communicate mathematical ideas;
- Mathematical Models with Applications
  - 111.43.c.9: Mathematical modeling in social sciences. The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences. The student is expected to:
    - 111.43.c.9.A: interpret information from various graphs, including line graphs, bar graphs, circle graphs, histograms, scatterplots, dot plots, stem-and-leaf plots, and box and whisker plots, to draw conclusions from the

data and determine the strengths and weaknesses of conclusions;

- Advanced Quantitative Reasoning
  - 111.44.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
    - 111.44.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
    - 111.44.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
    - 111.44.c.1.E: create and use representations to organize, record, and communicate mathematical ideas;
- Statistics
  - 111.47.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
    - 111.47.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
    - 111.47.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
    - 111.47.c.1.D: communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

Science

- Biology:
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.42.c.1.B: use scientific practices to plan and conduct

    - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
- 112.42.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
    - 112.42.c.2.C: use mathematical calculations to assess quantitative relationships in data
- 112.42.c.5: Biological Structures, Functions, and Processes: The student knows that biological structures at multiple levels of organization perform specific functions and processes that affect life. The student is expected to:
    - 112.42.c.5.B: compare and contrast prokaryotic and eukaryotic cells, including their complexity, and compare and contrast scientific explanations for cellular complexity
    - 112.42.c.5.C: investigate homeostasis through the cellular transport of molecules
- 112.42.c.6: Biological Structures, Functions, and Processes: The student knows how an organism grows and the importance of cell differentiation. The student is expected to:
    - 112.42.c.6.A: explain the importance of the cell cycle to the growth of organisms, including an overview of the stages of the cell cycle and deoxyribonucleic acid (DNA) replication models
    - 112.42.c.6.B: explain the process of cell specialization through cell differentiation, including the role of environmental factors
- 112.42.c.10: Biological Evolution. The student knows evolutionary theory is a scientific explanation for the unity and diversity of life that has multiple mechanisms. The student is expected to:
    - 112.42.c.10.A: analyze and evaluate how natural selection produces change in populations and not in individuals
    - 112.42.c.10.B: analyze and evaluate how the elements of natural selection, including inherited variation, the potential of a population to produce more offspring than

can survive, and a finite supply of environmental resources, result in differential reproductive success

- 112.42.c.11: Biological Structures, Functions, and Processes. Science concepts--biological structures, functions, and processes. The student knows the significance of matter cycling, energy flow, and enzymes in living organisms. The student is expected to:
  - 112.42.c.11.A: explain how matter is conserved and energy is transferred during photosynthesis and cellular respiration using models, including the chemical equations for these processes
- 112.42.c.13: Interdependence Within Environmental Systems. The student knows that organisms have an organizational structure and variations can influence survival of populations. The student is expected to:
  - 112.42.c.13.A: investigate and evaluate how ecological relationships, including predation, parasitism, commensalism, mutualism, and competition, influence ecosystem stability
  - 112.42.c.13.C: explain the significance of the carbon and nitrogen cycles to ecosystem stability and analyze the consequences of disrupting these cycles
  - 112.42.c.13.D: explain how environmental change, including change due to human activity, affects biodiversity and analyze how changes in biodiversity impact ecosystem stability

- Environmental System:
  - 112.50.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.50.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.50.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
    - 112.50.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence

        - 112.50.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.50.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
        - 112.50.c.2.C: use mathematical calculations to assess quantitative relationships in data
    - 112.50.c.5: Science concepts. The student knows the relationships of biotic and abiotic factors within habitats, ecosystems, and biomes. The student is expected to:
        - 112.50.c.5.B: explain the cycling of water, phosphorus, carbon, silicon, and nitrogen through ecosystems, including sinks, and the human interactions that alter these cycles using tools such as models
- <u>Earth Systems Science:</u>
    - 112.49.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.49.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.49.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
        - 112.49.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
        - 112.49.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.49.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:

        - 112.49.c.2.C: use mathematical calculations to assess quantitative relationships in data
    - 112.49.c.12: Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:
        - 112.49.c.12.F: explain the cycling of carbon through different forms among Earth's systems and how biological processes have caused major changes to the carbon cycle in those systems over Earth's history

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
    - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.2.c.1.c: demonstrate knowledge of personal and occupational safety, environmental regulations, and first-aid policy in the workplace;
    - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
        - 130.2.c.4.f: compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment,
    - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
        - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
        - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
    - 130.2.c.7: The student applies appropriate research methods to agriculture, food, and natural resources topics. The student is expected to:
        - 130.2.c.7.c: describe scientific methods of research.
- Equine Science
    - 130.6.c.6: The student identifies animal pests and diseases. The student is expected to:
        - 130.6.c.6.a: identify and describe the role of bacteria, fungi, viruses, genetics, and nutrition in disease;

        - 130.6.c.6.b: identify methods of disease control, treatment, and prevention;
    - Livestock Production
        - 130.7.c.8: The student identifies animal pests and diseases. The student is expected to:
            - 130.7.c.8.a: identify and describe the role of bacteria, fungi, viruses, genetics, and nutrition in disease;
            - 130.7.c.8.b: identify methods of disease control, treatment, and prevention; and
    - Small Animal Management
        - 130.8.c.4: The student learns the hazards associated with working in the small animal industry. The student is expected to:
            - 130.8.c.4.a: explain the importance of safe practices when working with small animals;
            - 130.8.c.4.c: describe methods of preventing the spread of disease;
    - Veterinary Medical Applications
        - 130.9.c.9: The student evaluates animal diseases and identifies internal, external, and protozoal parasites. The student is expected to:
            - 130.9.c.9.a: identify factors that influence the health of animals;
            - 130.9.c.9.d: describe the process of immunity and disease transmission;

BLUE'S THE CLUE: SOURING MILK FOR SCIENCE

English Language Arts and Reading

- English I
    - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
        - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;

        - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
    - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.36.c.4.G: evaluate details read to determine key ideas;
    - 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
        - 110.36.c.11.A: develop questions for formal and informal inquiry
        - 110.36.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results
- English II
    - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
        - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
        - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
    - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.37.c.4.G: evaluate details read to determine key ideas;

        - 110.37.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
            - 110.37.c.11.A: develop questions for formal and informal inquiry;
            - 110.37.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
    - English III
        - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
            - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
            - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
            - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
        - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
            - 110.38.c.4.G: evaluate details read to understand key ideas;
        - 110.38.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
            - 110.38.c.11.A: develop questions for formal and informal inquiry;
            - 110.38.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.39.c.4.G: evaluate details read to analyze key ideas;
  - 110.39.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.39.c.11.A: develop questions for formal and informal inquiry;
    - 110.39.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

Social Studies

- United States History Studies Since 1877
  - 113.41.d.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
    - 113.41.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and

disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.E: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections between historical events over time;
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
  - 113.42.c.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
    - 113.42.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.D: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections over time;
    - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- Economics with Emphasis on the Free Enterprise System and Its Benefits

- 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
  - 113.31.d.21.A: analyze economic information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, and drawing inferences and conclusions;
  - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- 113.31.d.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

Math

- Algebra 1
  - 111.39.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
    - 111.39.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
    - 111.39.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
    - 111.39.c.1.E: create and use representations to organize, record, and communicate mathematical ideas;
- Mathematical Models with Applications
  - 111.43.c.9: Mathematical modeling in social sciences. The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences. The student is expected to:
    - 111.43.c.9.A: interpret information from various graphs, including line graphs, bar graphs, circle graphs,

histograms, scatterplots, dot plots, stem-and-leaf plots, and box and whisker plots, to draw conclusions from the data and determine the strengths and weaknesses of conclusions;

- Advanced Quantitative Reasoning
  - 111.44.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
    - 111.44.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
    - 111.44.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
    - 111.44.c.1.E: create and use representations to organize, record, and communicate mathematical ideas;
- Statistics
  - 111.47.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
    - 111.47.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
    - 111.47.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
    - 111.47.c.1.D: communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

Science

- Biology:
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:

- 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
- 112.42.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
- 112.42.c.1.D: use appropriate tools such as microscopes, slides, Petri dishes, laboratory glassware, metric rulers, digital balances, pipets, filter paper, micropipettes, gel electrophoresis and polymerase chain reaction (PCR) apparatuses, microcentrifuges, water baths, incubators, thermometers, hot plates, data collection probes, test tube holders, lab notebooks or journals, hand lenses, and models, diagrams, or samples of biological specimens or structures
- 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
- 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
- 112.42.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems

▪ 112.42.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
  - 112.42.c.2.D: evaluate experimental and engineering designs

▪ 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
  - 112.42.c.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
  - 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and

recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.42.c.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- Environmental System:
    - 112.50.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.50.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.50.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
        - 112.50.c.1.D: use appropriate tools such as meter sticks, metric rulers, pipettes, graduated cylinders, standard laboratory glassware, balances, timing devices, pH meters or probes, various data collecting probes, thermometers, calculators, computers, internet access, turbidity testing devices, hand magnifiers, work and disposable gloves, compasses, first aid kits, binoculars, field guides, water quality test kits or probes, soil test kits or probes, 30 meter tape measures, tarps, shovels, trowels, screens, buckets, rock and mineral samples equipment, air quality testing devices, cameras, flow meters, Global Positioning System (GPS) units, Geographic Information System (GIS) software, computer models, densiometers, spectrophotometers, stereomicroscopes, compound microscopes, clinometers, field journals, various prepared slides, hand lenses, hot plates, Petri dishes, sampling nets, waders, leveling grade rods (Jason sticks), protractors, inclination and height distance calculators, samples of biological specimens or structures, core sampling equipment, and kick nets

        - 112.47.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
        - 112.50.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
        - 112.50.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
    - 112.50.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
        - 112.50.c.2.D: evaluate experimental and engineering designs
    - 112.50.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
        - 112.50.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
    - 112.50.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
        - 112.50.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
    - 112.50.c.7: Science concepts. The student knows the sources and flow of energy through an environmental system. The student is expected to:
        - 112.50.c.7.D: identify and describe how energy is used, transformed, and conserved as it flows through ecosystems
- <u>Earth Systems Science:</u>

- 112.49.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.49.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.49.c.1.B: apply scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
    - 112.49.c.1.D: use appropriate tools such as a drawing compass, magnetic compass, bar magnets, topographical and geological maps, satellite imagery and other remote sensing data, Geographic Information Systems (GIS), Global Positioning System (GPS), hand lenses, and fossil and rock sample kits;
    - 112.49.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.49.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.49.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
- 112.49.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
    - 112.49.c.2.D: evaluate experimental and engineering designs
- 112.49.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:

        - 112.49.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
    - 112.49.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
        - 112.49.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
    - 112.49.c.12: Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:
        - 112.49.c.12.B: analyze the impact on humans of naturally occurring extreme weather events such as flooding, hurricanes, tornadoes, and thunderstorms;
        - 112.49.c.12.D: analyze recent global ocean temperature data to predict the consequences of changing ocean temperature on evaporation, sea level, algal growth, coral bleaching, and biodiversity

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
    - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.2.c.1.c: demonstrate knowledge of personal and occupational safety, environmental regulations, and first-aid policy in the workplace;
    - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
        - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
        - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.

        - 130.2.c.7: The student applies appropriate research methods to agriculture, food, and natural resources topics. The student is expected to:
            - 130.2.c.7.c: describe scientific methods of research.
        - 130.2.c.13: The student describes the principles of food products and processing systems. The student is expected to:
            - 130.2.c.13.a: evaluate food products and processing systems;
            - 130.2.c.13.c: discuss current issues in food production; and
            - 130.2.c.13.d: use tools, equipment, and personal protective equipment common to food products and processing systems.
    - Food Technology and Safety
        - 130.15.c.11: The student describes the processing, packaging, quality analysis, and marketing of milk and dairy products for distribution. The student is expected to:
            - 130.15.c.11.a: describe methods of preparing milk for processing;
            - 130.15.c.11.b: evaluate methods of processing milk and dairy products;

CARBON HOOFPRINTS: COWS AND CLIMATE CHANGE

English Language Arts and Reading

- English I
    - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
        - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
        - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.

- 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.36.c.4.A: establish purpose for reading assigned and self-selected texts;
  - 110.36.c.4.F: make inferences and use evidence to support understanding;
  - 110.36.c.4.G: evaluate details read to determine key ideas;
  - 110.36.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, and annotating when understanding breaks down.
- 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.36.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
  - 110.36.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
  - 110.36.c.5.F: respond using acquired content and academic vocabulary as appropriate;

- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information,

developing a plan for consensus building, and setting ground rules for decision making.

- 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.37.c.4.A: establish purpose for reading assigned and self-selected texts;
  - 110.37.c.4.F: make inferences and use evidence to support understanding;
  - 110.37.c.4.G: evaluate details read to determine key ideas;
  - 110.37.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, and annotating when understanding breaks down.
- 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.37.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
  - 110.37.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
  - 110.37.c.5.F: respond using acquired content and academic vocabulary as appropriate;

- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;

- 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

- 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.38.c.4.A: establish purpose for reading assigned and self-selected texts;
  - 110.38.c.4.F: make inferences and use evidence to support understanding;
  - 110.38.c.4.G: evaluate details read to understand key ideas;
  - 110.38.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, annotating, and using outside sources when understanding breaks down.
- 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.38.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
  - 110.38.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
  - 110.38.c.5.F: respond using acquired content and academic vocabulary as appropriate;

- <u>English IV</u>
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a

speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
- 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
- 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

- 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.39.c.4.A: establish purpose for reading assigned and self-selected texts;
  - 110.39.c.4.F: make inferences and use evidence to support understanding;
  - 110.39.c.4.G: evaluate details read to analyze key ideas;
  - 110.39.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, annotating, and using outside sources when understanding breaks down.
- 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.39.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
  - 110.39.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
  - 110.39.c.5.F: respond using acquired content and academic vocabulary as appropriate;

Social Studies – No Social Studies TEKS
Mathematics – No Math TEKS
Science

- Biology

        - 112.42.c.13: The student knows that interactions at various levels of organization occur within an ecosystem to maintain stability. The student is expected to:
            - 112.42.c.13.C: explain the significance of the carbon and nitrogen cycles to ecosystem stability and analyze the consequences of disrupting these cycles
    - Earth Systems Science
        - 112.49.c.12: Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:
            - 112.49.c.12.B: analyze the impact on humans of naturally occurring extreme weather events such as flooding, hurricanes, tornadoes, and thunderstorms
    - Environmental Systems
        - 112.50.c.5: Science concepts. The student knows the relationships of biotic and abiotic factors within habitats, ecosystems, and biomes. The student is expected to:
            - 112.50.c.5.B: explain the cycling of water, phosphorus, carbon, silicon, and nitrogen through ecosystems, including sinks, and the human interactions that alter these cycles using tools such as models

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
    - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
    - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
        - 130.2.c.4.a: define the scope of agriculture;
        - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
    - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:

- 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
- 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.

▪ 130.2.c.12: The student develops technical knowledge and skills related to animal systems. The student is expected to:
- 130.2.c.12.b: identify animal anatomy and physiology;

▪ 130.2.c.15: The student explains the relationship between agriculture, food, and natural resources and the environment. The student is expected to:
- 130.2.c.15.a: determine the effects of agriculture, food, and natural resources upon safety, health, and the environment;

o Livestock Production
▪ 130.7.c.6: The student determines nutritional requirements of ruminant and non-ruminant animals, including poultry. The student is expected to:
- 130.7.c.6.a: describe the digestive systems of ruminant and non-ruminant animals;

o Advanced Animal Science
▪ 130.10.c.10: The student determines nutritional requirements of ruminant and non-ruminant animals. The student is expected to:
- 130.10.c.10.A: describe the structures and functions of the digestive system of ruminant animals, including cattle, and non-ruminant animals, including poultry;

COLIFORM COUNTS

English Language Arts and Reading

o English I
▪ 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
- 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;

        - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.36.c.4.G: evaluate details read to determine key ideas;
- English II
    - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
        - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.37.c.4.G: evaluate details read to determine key ideas;
- English III
    - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.38.c.4.G: evaluate details read to understand key ideas;

- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
  - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.39.c.4.G: evaluate details read to analyze key ideas;

Social Studies

- United States History Studies Since 1877
  - 113.41.d.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
    - 113.41.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
  - 113.42.c.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:

- 113.42.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
  - 113.31.d.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

Math

- Algebra 1
  - 111.39.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
    - 111.39.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
    - 111.39.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;

        - 111.39.c.1.E: create and use representations to organize, record, and communicate mathematical ideas;
- Mathematical Models with Applications
    - 111.43.c.9: Mathematical modeling in social sciences. The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences. The student is expected to:
        - 111.43.c.9.A: interpret information from various graphs, including line graphs, bar graphs, circle graphs, histograms, scatterplots, dot plots, stem-and-leaf plots, and box and whisker plots, to draw conclusions from the data and determine the strengths and weaknesses of conclusions;
- Advanced Quantitative Reasoning
    - 111.44.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
        - 111.44.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
        - 111.44.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
        - 111.44.c.1.E: create and use representations to organize, record, and communicate mathematical ideas;
- Statistics
    - 111.47.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
        - 111.47.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
        - 111.47.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
        - 111.47.c.1.D: communicate mathematical ideas, reasoning, and their implications using multiple

representations, including symbols, diagrams, graphs, and language as appropriate;

Science

- Biology:
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.42.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
    - 112.42.c.1.C: use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards
    - 112.42.c.1.D: use appropriate tools such as microscopes, slides, Petri dishes, laboratory glassware, metric rulers, digital balances, pipets, filter paper, micropipettes, gel electrophoresis and polymerase chain reaction (PCR) apparatuses, microcentrifuges, water baths, incubators, thermometers, hot plates, data collection probes, test tube holders, lab notebooks or journals, hand lenses, and models, diagrams, or samples of biological specimens or structures
    - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.42.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems

- 112.42.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
  - 112.42.c.2.A: identify advantages and limitations of models such as their size, properties, and materials
  - 112.42.c.2.C: use mathematical calculations to assess quantitative relationships in data
- 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
  - 112.42.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
  - 112.42.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
- 112.42.c.12: Science concepts--biological structures, functions, and processes. The student knows that multicellular organisms are composed of multiple systems that interact to perform complex functions. The student is expected to:
  - 112.42.c.12.A: analyze the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals

- <u>Environmental System:</u>
  - 112.50.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.50.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.50.c.1.B: apply scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems

- 112.50.c.1.C: use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards
- 112.50.c.1.D: use appropriate tools such as meter sticks, metric rulers, pipettes, graduated cylinders, standard laboratory glassware, balances, timing devices, pH meters or probes, various data collecting probes, thermometers, calculators, computers, internet access, turbidity testing devices, hand magnifiers, work and disposable gloves, compasses, first aid kits, binoculars, field guides, water quality test kits or probes, soil test kits or probes, 30 meter tape measures, tarps, shovels, trowels, screens, buckets, rock and mineral samples equipment, air quality testing devices, cameras, flow meters, Global Positioning System (GPS) units, Geographic Information System (GIS) software, computer models, densiometers, spectrophotometers, stereomicroscopes, compound microscopes, clinometers, field journals, various prepared slides, hand lenses, hot plates, Petri dishes, sampling nets, waders, leveling grade rods (Jason sticks), protractors, inclination and height distance calculators, samples of biological specimens or structures, core sampling equipment, and kick nets
- 112.47.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
- 112.50.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
- 112.50.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems

▪ 112.50.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:

        - 112.50.c.2.A: identify advantages and limitations of models such as their size, properties, and materials
        - 112.50.c.2.C: use mathematical calculations to assess quantitative relationships in data
    - 112.50.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
        - 112.50.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
        - 112.50.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
    - 112.50.c.7: Science concepts. The student knows the sources and flow of energy through an environmental system. The student is expected to:
        - 112.50.c.7.D: identify and describe how energy is used, transformed, and conserved as it flows through ecosystems
- <u>Earth Systems Science:</u>
    - 112.49.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.49.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.49.c.1.B: apply scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
        - 112.49.c.1.C: use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards
        - 112.49.c.1.D: use appropriate tools such as a drawing compass, magnetic compass, bar magnets, topographical and geological maps, satellite imagery and other remote sensing data, Geographic Information Systems (GIS),

Global Positioning System (GPS), hand lenses, and fossil and rock sample kits;
    - 112.49.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.49.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.49.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
- 112.49.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
    - 112.49.c.2.A: identify advantages and limitations of models such as their size, properties, and materials
    - 112.49.c.2.C: use mathematical calculations to assess quantitative relationships in data
- 112.49.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.49.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
    - 112.49.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
- 112.49.c.12: Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:
    - 112.49.c.12.B: analyze the impact on humans of naturally occurring extreme weather events such as flooding, hurricanes, tornadoes, and thunderstorms;
    - 112.49.c.12.D: analyze recent global ocean temperature data to predict the consequences of changing ocean

temperature on evaporation, sea level, algal growth, coral bleaching, and biodiversity

Agriculture, Food, and Natural Resources

- Food Technology and Safety
  - 130.15.c.7: The student identifies procedures and regulations for sanitation and safety in the food industry. The student is expected to:
    - 130.15.c.7.d: assess conditions with regard to safety and health; and
- Food Processing
  - 130.16.c.5: The student understands quality control issues in food processing. The student is expected to:
    - 130.16.c.5.a: practice procedures relating to the safe manufacture of foods through hygienic food handling and processing;

CONCENTRATE ON THE SOLUTION

English Language Arts and Readimg

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information,

developing a plan for consensus building, and setting ground rules for decision making.

- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and

Social Studies – No Social Studies TEKS

Mathematics

- Algebra I
  - 111.39.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
    - 111.39.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
    - 111.39.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the

solution, and evaluating the problem-solving process and the reasonableness of the solution;
- 111.39.c.1.C: select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;

Science
- Chemistry
  - 112.43.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.43.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
  - 112.43.c.7: Science concepts. The student knows how atoms form ionic, covalent, and metallic bonds. The student is expected to:
    - 112.43.c.7.B: name and write the chemical formulas for ionic and covalent compounds using International Union of Pure and Applied Chemistry (IUPAC) nomenclature rules
  - 112.43.c.8: Science concepts. The student can quantify the changes that occur during chemical reactions. The student is expected to:
    - 112.43.c.8.C: calculate percent composition of compounds
  - 112.43.c.12.: Science concepts. The student understands and applies various rules regarding acids and bases. The student is expected to:
    - 112.43.c.12.C: differentiate between strong and weak acids and bases;

Agriculture, Food, and Natural Resources
- Principles of Agriculture Food and Natural Resources

        - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
            - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
        - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
            - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
            - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
        - 130.2.c.10: The student develops technical knowledge and skills related to soil systems. The student is expected to:
            - 130.2.c.10.a: identify the components and properties of soils;
    - Landscape Design and Management
        - 130.21.c.7: The student performs landscape maintenance services. The student is expected to:
            - 130.21.c.7.c: analyze nutritional needs of plants;
            - 130.21.c.7.d: develop fertilization plans that address plant needs and environmental concerns;
    - Turf Grass Management
        - 130.22.c.5: The student identifies and implements common cultural and physiological requirements for cool and warm season turf grass maintenance. The student is expected to:
            - 130.22.c.5.f: analyze nutritional needs of turf grass;
            - 130.22.c.5.g: develop fertilization plans that address turf grass needs and environmental concerns;
    - Greenhouse Operation and Production
        - 130.24.c.9: The student investigates pest identification and control methods in the greenhouse environment. The student is expected to:
            - 130.25.c.9.D: research chemicals used to regulate plant growth in the greenhouse; and
    - Advanced Plant and Soil Science
        - 130.25.c.15: The student evaluates components of plant science as they relate to crop production. The student is expected to:

- 130.25.c.15.d: perform plant management practices such as germination tests, plant spacing trials, and fertilizer tests; and

COOKING RIGHT: THE SCIENCE OF COOKING A HAMBURGER

English Language Arts and reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
  - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.36.c.4.G: evaluate details read to determine key ideas;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
  - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.37.c.4.G: evaluate details read to determine key ideas;

- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
  - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.38.c.4.G: evaluate details read to understand key ideas;
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
  - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.39.c.4.G: evaluate details read to analyze key ideas;

Social Studies

- United States History Studies Since 1877
  - 113.41.d.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
    - 113.41.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies

critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:

- 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

- 113.42.c.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
  - 113.42.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
  - 113.31.d.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

Math

- Algebra 1

        - 111.39.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
            - 111.39.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
            - 111.39.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
            - 111.39.c.1.E: create and use representations to organize, record, and communicate mathematical ideas;
    - Mathematical Models with Applications
        - 111.43.c.9: Mathematical modeling in social sciences. The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences. The student is expected to:
            - 111.43.c.9.A: interpret information from various graphs, including line graphs, bar graphs, circle graphs, histograms, scatterplots, dot plots, stem-and-leaf plots, and box and whisker plots, to draw conclusions from the data and determine the strengths and weaknesses of conclusions;
    - Advanced Quantitative Reasoning
        - 111.44.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
            - 111.44.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
            - 111.44.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
            - 111.44.c.1.E: create and use representations to organize, record, and communicate mathematical ideas;
    - Statistics
        - 111.47.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

- 111.47.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
- 111.47.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
- 111.47.c.1.D: communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

Science

- Biology:
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.42.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
    - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
  - 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.42.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories

        - 112.42.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
    - 112.42.c.7: Mechanisms of Genetics: The student knows the role of nucleic acids in gene expression. The student is expected to:
        - 112.42.c.7.A: identify components of DNA, explain how the nucleotide sequence specifies some traits of an organism, and examine scientific explanations for the origin of DNA
        - 112.42.c.7.C: identify and illustrate changes in DNA and evaluate the significance of these changes
    - 112.42.c.10: Biological Evolution. The student knows evolutionary theory is a scientific explanation for the unity and diversity of life that has multiple mechanisms. The student is expected to:
        - 112.42.c.10.A: analyze and evaluate how natural selection produces change in populations and not in individuals
        - 112.42.c.10.B: analyze and evaluate how the elements of natural selection, including inherited variation, the potential of a population to produce more offspring than can survive, and a finite supply of environmental resources, result in differential reproductive success
- Environmental System:
    - 112.50.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.50.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.50.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
        - 112.50.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence

        - 112.50.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.50.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
        - 112.50.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
        - 112.50.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
    - 112.50.c.5: Science concepts. The student knows the relationships of biotic and abiotic factors within habitats, ecosystems, and biomes. The student is expected to:
        - 112.50.c.5.G: predict changes that may occur in an ecosystem if genetic diversity is increased or decreased

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
    - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.2.c.1.a: identify career development, education, and entrepreneurship opportunities in the field of agriculture, food, and natural resources;
        - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
        - 130.2.c.1.c: demonstrate knowledge of personal and occupational safety, environmental regulations, and first-aid policy in the workplace;
        - 130.2.c.1.e: identify careers in agriculture, food, and natural resources with required aptitudes in science, technology, engineering, mathematics,
    - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
        - 130.2.c.4.a: define the scope of agriculture;

        - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society; language arts, and social studies.
    - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
        - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
        - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
    - 130.2.c.7: The student applies appropriate research methods to agriculture, food, and natural resources topics. The student is expected to:
        - 130.2.c.7.a: discuss major research and developments in the fields of agriculture, food, and natural resources;
        - 130.2.c.7.b: use a variety of resources for research and development; and
        - 130.2.c.7.c: describe scientific methods of research.
    - 130.2.c.13: The student describes the principles of food products and processing
        - 130.2.c.13.a: evaluate food products and processing systems;
        - 130.2.c.13.b: determine trends in world food production;
        - 130.2.c.13.c: discuss current issues in food production; and
        - 130.2.c.13.d: use tools, equipment, and personal protective equipment common to food products and processing systems.
- Food Technology and Safety
    - 130.15.c.7: The student identifies procedures and regulations for sanitation and safety in the food industry. The student is expected to:
        - 130.15.c.7.d: assess conditions with regard to safety and health; and
- Food Processing
    - 130.16.c.5: The student understands quality control issues in food processing. The student is expected to:
        - 130.16.c.5.a: practice procedures relating to the safe manufacture of foods through hygienic food handling and processing;

TEXAS FARM BUREAU®

DESIGN 'Y'ER GENES

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
  - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.36.c.4.G: evaluate details read to determine key ideas;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
  - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.37.c.4.G: evaluate details read to determine key ideas;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral

language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
  - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.38.c.4.G: evaluate details read to understand key ideas;
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
  - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.39.c.4.G: evaluate details read to analyze key ideas;

Social Studies
- United States History Studies Since 1877
  - 113.41.d.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
    - 113.41.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:

        - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
    - 113.42.c.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
        - 113.42.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
- World Geography Studies
    - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
        - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- Economics with Emphasis on the Free Enterprise System and Its Benefits
    - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
        - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
    - 113.31.d.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

Mathematics

- Algebra 1
    - 111.39.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

        - 111.39.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
        - 111.39.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
        - 111.39.c.1.E: create and use representations to organize, record, and communicate mathematical ideas;
    - Mathematical Models with Applications
        - 111.43.c.9: Mathematical modeling in social sciences. The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences. The student is expected to:
            - 111.43.c.9.A: interpret information from various graphs, including line graphs, bar graphs, circle graphs, histograms, scatterplots, dot plots, stem-and-leaf plots, and box and whisker plots, to draw conclusions from the data and determine the strengths and weaknesses of conclusions;
    - Advanced Quantitative Reasoning
        - 111.44.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
            - 111.44.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
            - 111.44.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
            - 111.44.c.1.E: create and use representations to organize, record, and communicate mathematical ideas;
- Statistics
    - 111.47.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
        - 111.47.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;

- 111.47.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
- 111.47.c.1.D: communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

Science

- Biology:
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
  - 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.42.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
  - 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.42.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a

science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers

- 112.42.c.6: Biological Structures, Functions, and Processes: The student knows how an organism grows and the importance of cell differentiation. The student is expected to:
  - 112.42.c.6.A: explain the importance of the cell cycle to the growth of organisms, including an overview of the stages of the cell cycle and deoxyribonucleic acid (DNA) replication models
- 112.42.c.7: Mechanisms of Genetics: The student knows the role of nucleic acids in gene expression. The student is expected to:
  - 112.42.c.7.A: identify components of DNA, explain how the nucleotide sequence specifies some traits of an organism, and examine scientific explanations for the origin of DNA
  - 112.42.c.7.B: describe the significance of gene expression and explain the process of protein synthesis using models of DNA and ribonucleic acid (RNA)
  - 112.42.c.7.C: identify and illustrate changes in DNA and evaluate the significance of these changes
  - 112.42.c.7.D: discuss the importance of molecular technologies such as polymerase chain reaction (PCR), gel electrophoresis, and genetic engineering that are applicable in current research and engineering practices
- 112.42.c.8: Mechanisms of Genetics: The student knows the role of nucleic acids and the principles of inheritance and variation of traits in Mendelian and non-Mendelian genetics. The student is expected to:
- 112.42.c.8.A: analyze the significance of chromosome reduction, independent assortment, and crossing over during meiosis in increasing diversity in populations of organisms that reproduce sexually

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical

thinking, and systems of operation in agriculture, food, and natural resources;
- 130.2.c.1.c: demonstrate knowledge of personal and occupational safety, environmental regulations, and first-aid policy in the workplace;
- 130.2.c.1.e: identify careers in agriculture, food, and natural resources with required aptitudes in science, technology, engineering, mathematics, language arts, and social studies.

- 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
  - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
  - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
- 130.2.c.7: The student applies appropriate research methods to agriculture, food, and natural resources topics. The student is expected to:
  - 130.2.c.7.a: discuss major research and developments in the fields of agriculture, food, and natural resources;
  - 130.2.c.7.b: use a variety of resources for research and development; and
  - 130.2.c.7.c: describe scientific methods of research.
- 130.2.c.11: The student develops technical knowledge and skills related to plant systems. The student is expected to:
  - 130.2.c.11.c: describe plant reproduction, genetics, and breeding;
- 130.2.c.12: The student develops technical knowledge and skills related to animal systems. The student is expected to:
  - 130.2.c.12.d: explain animal selection, reproduction, breeding, and genetics.

- <u>Advanced Animal Science</u>
  - 130.10.c.8: The student applies the principles of molecular genetics and heredity. The student is expected to:
    - 130.10.c.8.c: identify the parts of the nucleotide and the difference between the nucleotides found in deoxyribonucleic acid (DNA) versus ribonucleic acid (RNA);
    - 130.10.c.8.d: explain the functions of DNA and RNA;

TEXAS FARM BUREAU®

DOUBLE THE MUSCLE: PROBABILITIES AND PEDIGREES

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a

speaker's message and critiquing the impact of a speaker's use of diction and syntax;
- 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
- 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

Social Studies – No Social Studies TEKS

Mathematics

- Statistics
  - 111.47.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
    - 111.47.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
    - 111.47.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the

solution, and evaluating the problem-solving process and the reasonableness of the solution;
- 111.47.c.1.C: select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;
- 111.47.c.1.D: communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

▪ 111.47.c.5: Probability and random variables. The student applies the mathematical process standards to connect probability and statistics. The student is expected to:
- 111.47.c.5.A: determine probabilities, including the use of a two-way table;

Science
- Biology
  - 112.42.c.7: Science Concept The student knows the role of nucleic acids in gene expression. The student is expected to:
    - 112.42.c.7.B: describe the significance of gene expression and explain the process of protein synthesis using models of DNA and ribonucleic acid (RNA)
  - 112.42.c.8: Science Concept. The student knows the role of nucleic acids and the principles of inheritance and variation of traits in Mendelian and non-Mendelian genetics. The student is expected to:
    - 112.42.c.8.A: analyze the significance of chromosome reduction, independent assortment, and crossing over during meiosis in increasing diversity in populations of organisms that reproduce sexually

Agriculture, Food, and Natural Resources
- Principles of Agriculture
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;

        - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
            - 130.2.c.4.a: define the scope of agriculture;
            - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
            - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
        - 130.2.c.12: The student develops technical knowledge and skills related to animal systems. The student is expected to:
            - 130.2.c.12.d: explain animal selection, reproduction, breeding, and genetics.
    - Livestock Production
        - 130.7.c.7: The student explains animal genetics and reproduction. The student is expected to:
            - 130.7.c.7.b: explain the use of genetics in animal agriculture such as Expected Progeny Differences (EPDs), phenotype, and genotype;
    - Advanced Animal Science
        - 130.10.c.8: The student applies the principles of molecular genetics and heredity. The student is expected to:
            - 130.10.c.8.a: explain Mendel's laws of inheritance by predicting genotypes and phenotypes of offspring using the Punnett square;
            - 130.10.c.8.b: predict genotypes and phenotypes of animal offspring using Mendelian or non-Mendelian patterns of inheritance in various forms of livestock and use Punnett Square and assign alleles to justify all predictions;

EARTH'S LAND AND SOIL RESOURCES

English Language Arts and Reading

- English I
    - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;

        - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.36.c.4.G: evaluate details read to determine key ideas;
- English II
    - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
        - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.37.c.4.G: evaluate details read to determine key ideas;
- English III
    - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.38.c.4.G: evaluate details read to understand key ideas;
        - English IV

- 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
  - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
- 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.39.c.4.G: evaluate details read to analyze key ideas;

Social Studies

- United States History Studies Since 1877
  - 113.41.d.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
    - 113.41.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.E: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections between historical events over time;
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
  - 113.42.c.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:

        - 113.42.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
    - World Geography Studies
        - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
            - 113.43.d.21.D: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections over time;
            - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
    - Economics with Emphasis on the Free Enterprise System and Its Benefits
        - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
            - 113.31.d.21.A: analyze economic information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, and drawing inferences and conclusions;
            - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
        - 113.31.d.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

Math – No Math TEKS

TEXAS FARM BUREAU®

Science

- Biology:
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
  - 112.42.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
    - 112.42.c.2.A: identify advantages and limitations of models such as their size, properties, and materials
    - 112.42.c.2.B: analyze data by identifying significant statistical features, patterns, sources of error, and limitations
    - 112.42.c.2.C: use mathematical calculations to assess quantitative relationships in data
  - 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.42.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
  - 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:

- 112.42.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
- 112.42.c.4.B: relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content
- 112.42.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers

▪ 112.42.c.12: Science concepts--biological structures, functions, and processes. The student knows that multicellular organisms are composed of multiple systems that interact to perform complex functions. The student is expected to:

- 112.42.c.12.A: analyze the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals
- 112.42.c.12.B: explain how the interactions that occur among systems that perform functions of transport, reproduction, and response in plants are facilitated by their structures

○ Environmental System:

▪ 112.50.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:

- 112.50.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
- 112.47.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence

    - 112.50.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
- 112.50.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
    - 112.50.c.2.A: identify advantages and limitations of models such as their size, properties, and materials
    - 112.50.c.2.B: analyze data by identifying significant statistical features, patterns, sources of error, and limitations
    - 112.50.c.2.C: use mathematical calculations to assess quantitative relationships in data
- 112.50.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.50.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
- 112.50.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.50.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
    - 112.50.c.4.B: relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content
    - 112.50.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers

- 112.50.c.9: Science concepts. The student knows that environments change naturally. The student is expected to:
  - 112.50.c.9.C: examine how natural processes such as succession and feedback loops can restore habitats and ecosystems
- 112.50.c.12: Science concepts. The student understands how ethics and economic priorities influence environmental decisions. The student is expected to:
  - 112.50.c.12.E: argue from evidence whether or not a healthy economy and a healthy environment are mutually exclusive
- 112.50.c.13: Science concepts. The student knows how legislation mediates human impacts on the environment. The student is expected to:
  - 112.50.c.13.A: describe past and present state and national legislation, including Texas automobile emissions regulations, the National Park Service Act, the Clean Air Act, the Clean Water Act, the Soil and Water Resources Conservation Act, and the Endangered Species Act
  - 112.50.c.13.B: evaluate the goals and effectiveness of past and present international agreements such as the environmental Antarctic Treaty System, the Montreal Protocol, the Kyoto Protocol, and the Paris Climate Accord

- Earth Systems Science:
  - 112.49.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.49.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.49.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.49.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models

- 112.49.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
    - 112.49.c.2.A: identify advantages and limitations of models such as their size, properties, and materials
    - 112.49.c.2.B: analyze data by identifying significant statistical features, patterns, sources of error, and limitations
    - 112.49.c.2.C: use mathematical calculations to assess quantitative relationships in data
- 112.49.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.49.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
- 112.49.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.49.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
    - 112.49.c.4.B: relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content
    - 112.49.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- 112.49.c.6: Science concepts. The student knows the evidence for the formation and composition of Earth's atmosphere, hydrosphere, biosphere, and geosphere. The student is expected to:

- 112.49.c.6.A: describe how impact accretion, gravitational compression, radioactive decay, and cooling differentiated proto-Earth into layers
- 112.49.c.6.B: evaluate the roles of volcanic outgassing and water bearing comets in developing Earth's atmosphere and hydrosphere
- 112.49.c.6.C: evaluate the evidence for changes to the chemical composition of Earth's atmosphere prior to the introduction of oxygen
- 112.49.c.6.D: evaluate scientific hypotheses for the origin of life through abiotic chemical processes
- 112.49.c.6.E: describe how the production of oxygen by photosynthesis affected the development of the atmosphere, hydrosphere, geosphere, and biosphere

▪ 112.49.c.11: Science concepts. The student knows that dynamic and complex interactions among Earth's systems produce climate and weather. The student is expected to:
- 112.49.c.11.A: analyze how energy transfer through Milankovitch cycles, albedo, and differences in atmospheric and surface absorption are mechanisms of climate
- 112.49.c.11.B: describe how Earth's atmosphere is chemically and thermally stratified and how solar radiation interacts with the layers to cause the ozone layer, the jet stream, Hadley and Ferrel cells, and other atmospheric phenomena;
- 112.49.c.11.C: model how greenhouse gases trap thermal energy near Earth's surface

▪ 112.49.c.12: Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:
- 112.49.c.12.A: evaluate the impact on humans of natural changes in Earth's systems such as earthquakes, tsunamis, and volcanic eruptions
- 112.49.c.12.C: analyze the natural and anthropogenic factors that affect the severity and frequency of extreme weather events and the hazards associated with these events

Agriculture, Food, and Natural Resources

- Principles Of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.3: The student analyzes concepts related to global diversity. The student is expected to:
    - 130.2.c.3.b: evaluate marketing factors and practices that impact the global markets.
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;
    - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
    - 130.2.c.4.d: identify potential future scenarios for agriculture, food, and natural resources systems, including global impacts;
    - 130.2.c.4.e: describe how emerging technologies and globalization impacts agriculture, food, and natural resources; and
  - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
    - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
    - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
  - 130.2.c.15: The student explains the relationship between agriculture, food, and natural resources and the environment. The student is expected to:
    - 130.2.c.15.a: determine the effects of agriculture, food, and natural resources upon safety, health, and the environment;
- Energy and Natural Resource Technology

        - 130.11.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
            - 130.11.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in energy and natural resources;
        - 130.11.c.8: The student explains the effects of natural resource use. The student is expected to:
            - 130.11.c.8.b: explain the impact of human population dynamics on the environment;
    - Advanced Energy and Natural Resource Technology
        - 130.12.c. 1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
            - 130.12.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in energy and natural resources;
        - 130.12.c.4: The student determines and evaluates the importance and scope of energy and natural resources. The student is expected to:
            - 130.12.c.4.a: identify various types of natural resources;
        - 130.12.c.10: The student examines soil erosion as related to natural resource management and energy production. The student is expected to:
            - 130.12.c.10.a: examine the effects of natural resource management and energy production on soil erosion;
            - 130.12.c.10.b: analyze the components and functions of soils;
    - Wildlife, Fisheries, and Natural Resources
        - 130.17.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
            - 130.17.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in wildlife, fisheries, and natural resources;
        - 130.17.c.7: The student applies cartographic skills to natural resource activities. The student is expected to:
            - 130.17.c.7a: compare and contrast types of maps;
            - 130.17.c.7.b: interpret map features and legends;
            - 130.17.c.7.c: compare map scale to actual distance;

        - 130.17.c.7.d: evaluate elevation and terrain features from topographic maps;
        - 130.17.c.7.e: use land survey and coordinate systems; and
- Forestry and Woodland Ecosystems
    - 130.18.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.18.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in forestry and woodland ecosystems;
    - 130.18.c.8: The student applies cartographic skills to natural resource activities. The student is expected to:
        - 130.18.c.8.a: compare and contrast types of maps;
        - 130.18.c.8.b: interpret map features and legends;
        - 130.18.c.8.c: compare map scale to actual distance;
        - 130.18.c.8.d: evaluate elevation and terrain features from topographic maps;
        - 130.18.c.8.e: use land survey and coordinate systems; and
- Range Ecology and Management
    - 130.19.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.19.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in range ecology and management;
    - 130.19.c.3: The student develops an understanding of the rangeland ecosystem. The student is expected to:
        - 130.19.c.3.c: determine capabilities and limitations of rangelands.
    - 130.19.c.5: The student analyzes the biotic and abiotic components of a rangeland. The student is expected to:
        - 130.19.c.5.a: discuss components of rangeland with an emphasis on soil;
        - 130.19.c.5.b: determine components of rangeland with an emphasis on topography; and
        - 130.19.c.5.c: classify range sites by soil properties;
- Advanced Plant and Soil Science

- 130.25.c.4: The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to:
    - 130.25.c.4.e: evaluate models according to their limitations in representing biological objects or events; and
- 130.25.c.6: The student analyzes plant and soil science as it relates to plant and soil relationships affecting the production of food, fiber, and other economic crops. The student is expected to:
    - 130.25.c.6.a: explain the importance and interrelationship of soil and plants; and
- 130.25.c.8: The student explains the relationship of biotic and abiotic factors within habitats and ecosystems. The student is expected to:
    - 130.25.8.c: evaluate the impact of human activity such as pest control, hydroponics, and sustainable agriculture on ecosystems; and
- 130.25.c.9: The student analyzes soil science as it relates to food and fiber production. The student is expected to:
    - 130.25.c.9.a: explain soil formation;
    - 130.25.c.9.b: evaluate the properties and nature of soils;
    - 130.25.c.9.c: recognize the importance of conservation of soil and agencies involved in conservation;
- 130.25.c.10: The student describes the relationship between resources within environmental systems. The student is expected to:
    - 130.25.c.10.a: summarize methods of land use and management;
    - 130.25.c.10.d: analyze and evaluate the economic significance and interdependence of components of the environment;
    - 130.25.c.10.e: evaluate the impact of human activity and technology on soil fertility and productivity;
    - 130.25.c.10.f: analyze and describe the effects on environments of events such as fire, hurricanes, deforestation, mining, population growth, and urban development; and
    - 130.25.c.10.g: explain how regional changes in the environment may have a global effect.

TEXAS FARM BUREAU®

ENERGY AND BIOFUELS

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
  - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.36.c.4.G: evaluate details read to determine key ideas;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
  - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.37.c.4.G: evaluate details read to determine key ideas;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;

        - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
            - 110.38.c.4.G: evaluate details read to understand key ideas;
    - English IV
        - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
            - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
        - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
            - 110.39.c.4.G: evaluate details read to analyze key ideas;

Social Studies

- United States History Studies Since 1877
    - 113.41.d.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
        - 113.41.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
- World History Studies
    - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
        - 113.42.d.28.E: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions,

drawing inferences and conclusions, and developing connections between historical events over time;
- 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

- 113.42.c.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
  - 113.42.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

- <u>World Geography Studies</u>
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.D: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections over time;
    - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- <u>Economics with Emphasis on the Free Enterprise System and Its Benefits</u>
  - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.31.d.21.A: analyze economic information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, and drawing inferences and conclusions;
    - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

- 113.31.d.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

Mathematics

- Mathematical Models with Applications
  - 111.43.c.9: Mathematical modeling in social sciences. The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences. The student is expected to:
    - 111.43.c.9.A: interpret information from various graphs, including line graphs, bar graphs, circle graphs, histograms, scatterplots, dot plots, stem-and-leaf plots, and box and whisker plots, to draw conclusions from the data and determine the strengths and weaknesses of conclusions;

Science

- Biology:
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.42.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
    - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models

- 112.42.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
  - 112.42.c.2.D: evaluate experimental and engineering designs
- 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
  - 112.42.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
- 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
  - 112.42.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
  - 112.42.c.4.B: relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content
- 112.42.c.5: Biological Structures, Functions, and Processes: The student knows that biological structures at multiple levels of organization perform specific functions and processes that affect life. The student is expected to:
  - 112.42.c.5.A: relate the functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids, to the structure and function of a cell
- 112.42.c.11: Biological Structures, Functions, and Processes. Science concepts--biological structures, functions, and processes. The student knows the significance of matter cycling, energy flow, and enzymes in living organisms. The student is expected to:
  - 112.42.c.11.A: explain how matter is conserved and energy is transferred during photosynthesis and cellular

respiration using models, including the chemical equations for these processes
        - 112.42.c.11.B: investigate and explain the role of enzymes in facilitating cellular processes
    - 112.42.c.12: Science concepts--biological structures, functions, and processes. The student knows that multicellular organisms are composed of multiple systems that interact to perform complex functions. The student is expected to:
        - 112.42.c.12.A: analyze the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals
        - 112.42.c.12.B: explain how the interactions that occur among systems that perform functions of transport, reproduction, and response in plants are facilitated by their structures
    - 112.42.c.13: Interdependence Within Environmental Systems. The student knows that organisms have an organizational structure and variations can influence survival of populations. The student is expected to:
        - 112.42.c.13.D: explain how environmental change, including change due to human activity, affects biodiversity and analyze how changes in biodiversity impact ecosystem stability
- <u>Environmental System:</u>
    - 112.50.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.50.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.50.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
        - 112.50.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence

    - 112.50.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
- 112.50.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
    - 112.50.c.2.D: evaluate experimental and engineering designs
- 112.50.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.50.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
- 112.50.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.50.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
    - 112.50.c.4.B: relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content
- 112.50.c.5: Science concepts. The student knows the relationships of biotic and abiotic factors within habitats, ecosystems, and biomes. The student is expected to:
    - 112.50.c.5.A: identify native plants and animals within a local ecosystem and compare their roles to those of plants and animals in other biomes, including aquatic, grassland, forest, desert, and tundra
- 112.50.c.6: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:

        - 112.50.c.6.A: compare and contrast land use and management methods and how they affect land attributes such as fertility, productivity, economic value, and ecological stability
        - 112.50.c.6.C: document the use and conservation of both renewable and non-renewable resources as they pertain to sustainability
        - 112.50.c.6.E: analyze and evaluate the economic significance and interdependence of resources within the local environmental system
    - 112.50.c.7: Science concepts. The student knows the sources and flow of energy through an environmental system. The student is expected to:
        - 112.50.c.7.A: describe the interactions between the components of the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere
    - 112.50.c.11: Science concepts. The student understands how individual and collective actions impact environmental systems. The student is expected to:
        - 112.50.c.11.C: research the advantages and disadvantages of "going green" such as organic gardening and farming, natural methods of pest control, hydroponics, xeriscaping, energy-efficient homes and appliances, and hybrid cars
    - 112.50.c.12: Science concepts. The student understands how ethics and economic priorities influence environmental decisions. The student is expected to:
        - 112.50.c.12.A: evaluate cost-benefit trade-offs of commercial activities such as municipal development, food production, deforestation, over-harvesting, mining, and use of renewable and non-renewable energy sources
        - 112.50.c.12.C: analyze how ethical beliefs influence environmental scientific and engineering practices such as methods for food production, water distribution, energy production, and the extraction of minerals
- Earth Systems Science:
    - 112.49.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain

phenomena, or design solutions using appropriate tools and models. The student is expected to:

- 112.49.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
- 112.49.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
- 112.49.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
- 112.49.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models

- 112.49.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
  - 112.49.c.2.D: evaluate experimental and engineering designs
- 112.49.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
  - 112.49.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
- 112.49.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
  - 112.49.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
  - 112.49.c.4.B: relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and

contributions of diverse scientists as related to the content

- 112.49.c.8: Science concepts. The student knows how the Earth's interior dynamics and energy flow drive geological processes on Earth's surface. The student is expected to:
  - 112.49.c.8.B: develop a model of the physical, mechanical, and chemical composition of Earth's layers using evidence from Earth's magnetic field, the composition of meteorites, and seismic waves
- 112.49.c.12: Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:
  - 112.49.c.12.C: analyze the natural and anthropogenic factors that affect the severity and frequency of extreme weather events and the hazards associated with these events

- Chemistry:
  - 112.43.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.43.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.43.c.1.B: apply scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
    - 112.43.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.43.c.1.F: organize quantitative and qualitative data using oral or written lab reports, labeled drawings, particle diagrams, charts, tables, graphs, journals, summaries, or technology-based reports;
  - 112.43.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations

to develop evidence-based arguments or evaluate designs. The student is expected to:

- 112.43.c.2.D: evaluate experimental and engineering designs

- 112.43.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
  - 112.43.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
- 112.43.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
  - 112.43.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
  - 112.43.c.4.B: relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content
- 112.43.c.5: Science concepts. The student understands the development of the Periodic Table and applies its predictive power. The student is expected to:
  - 112.43.c.5.A: explain the development of the Periodic Table over time using evidence such as chemical and physical properties
  - 112.43.c.5.C: analyze and interpret elemental data, including atomic radius, atomic mass, electronegativity, ionization energy, and reactivity to identify periodic trends
- 112.43.c.11: Science concepts. The student understands and can apply the factors that influence the behavior of solutions. The student is expected to:
  - 112.43.c.11.B: distinguish among types of solutions, including electrolytes and nonelectrolytes and unsaturated, saturated, and supersaturated solutions

- 112.43.c.11.C: investigate how solid and gas solubilities are influenced by temperature using solubility curves and how rates of dissolution are influenced by temperature, agitation, and surface area
- 112.43.c.11.D: investigate the general rules regarding solubility and predict the solubility of the products of a double replacement reaction
- 112.43.c.11.E: calculate the concentration of solutions in units of molarity
- 112.43.c.11.F: calculate the dilutions of solutions using molarity

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
    - 130.2.c.1.c: demonstrate knowledge of personal and occupational safety, environmental regulations, and first-aid policy in the workplace;
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;
    - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
  - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
    - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
    - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
  - 130.2.c.7: The student applies appropriate research methods to agriculture, food, and natural resources topics. The student is expected to:

        - 130.2.c.7.a: discuss major research and developments in the fields of agriculture, food, and natural resources;
        - 130.2.c.7.b: use a variety of resources for research and development; and
        - 130.2.c.7.c: describe scientific methods of research.
    - 130.2.c.11: The student develops technical knowledge and skills related to plant systems. The student is expected to:
        - 130.2.c.11.d: identify plants of importance to agriculture, food, and natural resources; and
    - 130.2.c.15: The student explains the relationship between agriculture, food, and natural resources and the environment. The student is expected to:
        - 130.2.c.15.a: determine the effects of agriculture, food, and natural resources upon safety, health, and the environment;
        - 130.2.c.15.b: identify regulations relating to safety, health, and environmental systems in agriculture, food, and natural resources;
        - 130.2.c.15.c: identify and design methods to maintain and improve safety, health, and environmental systems in agriculture, food, and natural resources;
        - 130.2.c.15.d: research and analyze alternative energy sources that stem from or impact agriculture, food, and natural resources; and
        - 130.2.c.15.e: evaluate energy and water conservation methods.
- Energy and Natural Resource Technology
    - 130.11.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.11.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in energy and natural resources;
    - 130.11.c.4: The student discusses the importance and scope of natural resources. The student is expected to:
        - 130.11.c.4.a: identify various types of natural resources;
        - 130.11.c.4.b: discuss renewable and non-renewable energy resources and their impact on the environment;
- Advanced Energy and Natural Resources

- 130.12.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
  - 130.12.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in energy and natural resources;
- 130.12.c.4: The student determines and evaluates the importance and scope of energy and natural resources. The student is expected to:
  - 130.12.c.4.a: identify various types of natural resources;
  - 130.12.c.4.b: identify renewable, non-renewable, and sustainable energy resources and determine their availability;
- 130.12.c.12: The student learns the processes for producing energy and green products from agricultural, biomass, fossil fuel, wind, solar, and geothermal sources. The student is expected to:
  - 130.12.c.12.a: identify agricultural and silvicultural crops and bio-products suitable for renewable production;
  - 130.12.c.12.b: discuss production processes for agricultural- and silvicultural-based bio-products;

- Advanced Plant and Soil Science
  - 130.25.c.14: The student explains how petroleum energy resources affect agriculture. The student is expected to:
    - 130.25.c.14.a: research and describe the origin of fossil fuels such as coal, oil, and natural gas;
    - 130.25.c.14.b: analyze issues regarding the use of fossil fuels and other non-renewable energy sources or alternative energy sources; and
    - 130.25.c.14.c: analyze the significance and economic impact of the use of fossil fuels and alternative energy sources.
- Agricultural Power Systems
  - 130.29.c.3: The student connects power generation to differing energy sources. The student is expected to:
    - 130.29.c.3.a: examine benefits and detriments of petroleum and alternative energy sources;
    - 130.29.c.3.b: compare environmental impacts of varying energy sources;

- 130.29.c.3.c: compare efficiency and characteristics of different energy sources; and
- 130.29.c.3.d: investigate the efficiency of power generation systems that use various energy sources.

ENERGY AND THE COMMODITY TRACE-BACK

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
  - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.36.c.4.G: evaluate details read to determine key ideas;
  - 110.36.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
    - 110.36.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
      - 110.36.c.9.B.i: using an organizing structure appropriate to purpose, audience, topic, and context;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral

language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
- 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.37.c.4.G: evaluate details read to determine key ideas;
- 110.37.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
    - 110.37.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
        - 110.37.c.9.B.i: using an organizing structure appropriate to purpose, audience, topic, and context;

- English III
    - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.38.c.4.G: evaluate details read to understand key ideas;

- 110.38.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
  - 110.38.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
    - 110.38.c.9.B.i: using strategic organizational structures appropriate to purpose, audience, topic, and context;

- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
  - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.39.c.4.G: evaluate details read to analyze key ideas;
  - 110.39.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
    - 110.39.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
      - 110.39.c.9.B.i: using strategic organizational structures appropriate to purpose, audience, topic, and context;

Social Studies

- United States History Studies Since 1877
  - 113.41.d.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:

- 113.41.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.E: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections between historical events over time;
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
  - 113.42.c.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
    - 113.42.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.D: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections over time;

- 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.31.d.21.A: analyze economic information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, and drawing inferences and conclusions;
    - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
  - 113.31.d.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

Mathematics – No Math TEKS

Science

- Environmental System:
  - 112.50.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.50.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.47.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.50.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data

tables, digital tools, diagrams, scientific drawings, and student-prepared models
- 112.50.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
  - 112.50.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- 112.50.c.13: Science concepts. The student knows how legislation mediates human impacts on the environment. The student is expected to:
  - 112.50.c.13.A: describe past and present state and national legislation, including Texas automobile emissions regulations, the National Park Service Act, the Clean Air Act, the Clean Water Act, the Soil and Water Resources Conservation Act, and the Endangered Species Act
  - 112.50.c.13.B: evaluate the goals and effectiveness of past and present international agreements such as the environmental Antarctic Treaty System, the Montreal Protocol, the Kyoto Protocol, and the Paris Climate Accord

- Earth Systems Science:
  - 112.49.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.49.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.49.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.49.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models

        - 112.49.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
            - 112.49.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
        - 112.49.c.12: Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:
            - 112.49.c.12.A: evaluate the impact on humans of natural changes in Earth's systems such as earthquakes, tsunamis, and volcanic eruptions
            - 112.49.c.12.C: analyze the natural and anthropogenic factors that affect the severity and frequency of extreme weather events and the hazards associated with these events
    - Chemistry:
        - 112.43.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
            - 112.43.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
            - 112.43.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
            - 112.43.c.1.F: organize quantitative and qualitative data using oral or written lab reports, labeled drawings, particle diagrams, charts, tables, graphs, journals, summaries, or technology-based reports;
            - 112.43.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:

- 112.43.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- 112.43.c.7: Science concepts. The student knows how atoms form ionic, covalent, and metallic bonds. The student is expected to:
- 112.43.c.7.B: name and write the chemical formulas for ionic and covalent compounds using International Union of Pure and Applied Chemistry (IUPAC) nomenclature rules

Career Development

- Career Preparation General
  - 127.20.d.8: The student identifies skills and attributes necessary for professional success. The student is expected to:
    - 127.2.d.8.a: evaluate and compare career options, including salaries and benefits;
    - 127.20.d.8.e: describe entrepreneurial opportunities in an occupational area of interest; and

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;
    - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
  - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
    - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
    - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.

        - 130.2.c.7: The student applies appropriate research methods to agriculture, food, and natural resources topics. The student is expected to:
            - 130.2.c.7.b: use a variety of resources for research and development; and
        - 130.2.c.13: The student describes the principles of food products and processing
            - 130.2.c.13.a: evaluate food products and processing systems;
        - 130.2.c.15: The student explains the relationship between agriculture, food, and natural resources and the environment. The student is expected to:
            - 130.2.c.15.d: research and analyze alternative energy sources that stem from or impact agriculture, food, and natural resources; and
    - Advanced Animal Science
        - 130.10.c.14: The student discusses livestock harvesting operations. The student is expected to:
            - 130.10.c.14.a: map the stages of animal growth and development and how they relate to market readiness;
            - 130.10.c.14.b: describe the harvesting process;
    - Advanced Energy and Natural Resource
        - 130.12.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
            - 130.12.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in energy and natural resources;
        - 130.12.c.4: The student determines and evaluates the importance and scope of energy and natural resources. The student is expected to:
            - 130.12.c.4.b: identify renewable, non-renewable, and sustainable energy resources and determine their availability;
            - 130.12.c.4.d: analyze the geographic and demographic uses of natural resources.
    - Food Technology and Safety
        - 130.15.c.9: The student describes the processing, packaging, quality analysis, and marketing of eggs, poultry, and fish and their by-products. The student is expected to:
            - 130.15.c.9.a: describe processing techniques;

- Advanced Plant and Soil Science
  - 130.25.c.14: The student explains how petroleum energy resources affect agriculture. The student is expected to:
    - 130.25.c.14.a: research and describe the origin of fossil fuels such as coal, oil, and natural gas;
    - 130.25.c.14.c: analyze the significance and economic impact of the use of fossil fuels and alternative energy sources.
  - 130.25.c.18: The student demonstrates skills related to the human, scientific, and technological dimensions of crop production and the resources necessary for producing domesticated plants. The student is expected to:
    - 130.25.c.18.a: describe the growth and development of major crops;
  - 130.25.c.20: The student identifies the sources and flow of energy through environmental systems. The student is expected to:
    - 130.25.c.20.a: summarize forms and sources of energy;
    - 130.25.c.20.b: explain the flow of energy in an environment;
    - 130.25.c.20.c: investigate and explain the effects of energy transformations in an ecosystem; and
    - 130.25.c.20.d: investigate and identify energy interaction in an ecosystem.
- Agriculture Power Systems
  - 130.29.c.3: The student connects power generation to differing energy sources. The student is expected to:
    - 130.29.c.3.c: compare efficiency and characteristics of different energy sources; and
    - 130.29.c.3.d: investigate the efficiency of power generation systems that use various energy sources.

ENZYMES AND BACTERIA ARE WHEY COOL!

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information,

developing a plan for consensus building, and setting ground rules for decision making.

- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

Social Studies

- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:

- 113.42.d.28.E: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections between historical events over time;
- 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.D: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections over time;
    - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.31.d.21.A: analyze economic information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, and drawing inferences and conclusions;
    - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

Mathematics – No Math TEKS

Science

- Biology:

- 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
- 112.42.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
    - 112.42.c.2.A: identify advantages and limitations of models such as their size, properties, and materials
    - 112.42.c.2.B: analyze data by identifying significant statistical features, patterns, sources of error, and limitations
    - 112.42.c.2.C: use mathematical calculations to assess quantitative relationships in data
- 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.42.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
- 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.42.c.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence,

logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student

- 112.42.c.5: Biological Structures, Functions, and Processes: The student knows that biological structures at multiple levels of organization perform specific functions and processes that affect life. The student is expected to:
  - 112.42.c.5.A: relate the functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids, to the structure and function of a cell
- 112.42.c.7: Mechanisms of Genetics: The student knows the role of nucleic acids in gene expression. The student is expected to:
  - 112.42.c.7.B: describe the significance of gene expression and explain the process of protein synthesis using models of DNA and ribonucleic acid (RNA)
- 112.42.c.11: Biological Structures, Functions, and Processes. Science concepts--biological structures, functions, and processes. The student knows the significance of matter cycling, energy flow, and enzymes in living organisms. The student is expected to:
  - 112.42.c.11.B: investigate and explain the role of enzymes in facilitating cellular processes
- 112.42.c.12: Science concepts--biological structures, functions, and processes. The student knows that multicellular organisms are composed of multiple systems that interact to perform complex functions. The student is expected to:
  - 112.42.c.12.B: explain how the interactions that occur among systems that perform functions of transport, reproduction, and response in plants are facilitated by their structures
- 112.42.c.13: Interdependence Within Environmental Systems. The student knows that organisms have an organizational structure and variations can influence survival of populations. The student is expected to:
  - 112.42.c.13.B: analyze how ecosystem stability is affected by disruptions to the cycling of matter and flow of energy through trophic levels using models

- Earth Systems Science:
  - 112.49.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies

problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:

- 112.49.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
- 112.49.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
- 112.49.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models

- 112.49.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
  - 112.49.c.2.A: identify advantages and limitations of models such as their size, properties, and materials
  - 112.49.c.2.B: analyze data by identifying significant statistical features, patterns, sources of error, and limitations
  - 112.49.c.2.C: use mathematical calculations to assess quantitative relationships in data
- 112.49.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
  - 112.49.c.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
- 112.49.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
  - 112.49.c.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student

- 112.49.c.12: Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:
  - 112.49.c.12.A: evaluate the impact on humans of natural changes in Earth's systems such as earthquakes, tsunamis, and volcanic eruptions
  - 112.49.c.12.C: analyze the natural and anthropogenic factors that affect the severity and frequency of extreme weather events and the hazards associated with these events

Agriculture, Food, and Natural Resources

- Food Technology and Safety
  - 130.15.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.15.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in food processing;
  - 130.15.c.4: The student analyzes the nutritive value of food constituents. The student is expected to:
    - 130.15.c.4.a: define the terms used in food technology;
  - 130.15.c.11: The student describes the processing, packaging, quality analysis, and marketing of milk and dairy products for distribution. The student is expected to:
    - 130.15.c.11.a: describe methods of preparing milk for processing;
    - 130.15.c.11.b: evaluate methods of processing milk and dairy products;
    - 130.15.c.11.c: identify dairy products, including cultured milk products and frozen dairy desserts; and
    - 130.15.c.11.d: process, classify, and grade cheese.
- Food Processing
  - 130.16.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.16.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation

in the food processing industry, including the value-added products industry;

- 130.16.c.4: The student understands consumer satisfaction issues. The student is expected to:
  - 130.16.c.4.a: practice equipment maintenance and sanitation procedures;
  - 130.16.c.4.b: explain the factors that affect food palatability;
- 130.16.c.5: The student understands quality control issues in food processing. The student is expected to:
  - 130.16.c.5.a: practice procedures relating to the safe manufacture of foods through hygienic food handling and processing;

FERMENTATION OF HONEY

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;

- 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
- 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.

- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating

a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

Social Studies – No Social Studies TEKS

Mathematics

- Mathematical Models with Applications
  - 111.43.c.9: Mathematical modeling in social sciences. The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences. The student is expected to:
    - 111.43.c.9.A: interpret information from various graphs, including line graphs, bar graphs, circle graphs, histograms, scatterplots, dot plots, stem-and-leaf plots, and box and whisker plots, to draw conclusions from the data and determine the strengths and weaknesses of conclusions;

Science

- Biology
  - 112.42.c.1: Scientific processes. The student uses scientific practices and equipment during laboratory and field investigations. The student is expected to:
    - 112.42.c.1.B: use scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems
    - 112.42.c.1.D: use appropriate tools such as microscopes, slides, Petri dishes, laboratory glassware, metric rulers, digital balances, pipets, filter paper, micropipettes, gel electrophoresis and polymerase chain reaction (PCR) apparatuses, microcentrifuges, water baths, incubators, thermometers, hot plates, data collection probes, test tube holders, lab notebooks or journals, hand lenses, and models, diagrams, or samples of biological specimens or structures
    - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data

tables, digital tools, diagrams, scientific drawings, and student-prepared models

- 112.42.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence based arguments or evaluate designs. The student is expected to:
  - 112.42.c.2.B: analyze data by identifying significant statistical features, patterns, sources of error, and limitations
- 112.42.c.3: Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
  - 112.42.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats

FERTILIZERS AND THE ENVIRONMENT

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:

- 110.36.c.4.A: establish purpose for reading assigned and self-selected texts;
- 110.36.c.4.E: make connections to personal experiences, ideas in other texts, and society;
- 110.36.c.4.F: make inferences and use evidence to support understanding;
- 110.36.c.4.G: evaluate details read to determine key ideas;
- 110.36.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, and annotating when understanding breaks down.

▪ 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.36.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
- 110.36.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
- 110.36.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

○ English II

▪ 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
- 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.

- 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.37.c.4.A: establish purpose for reading assigned and self-selected texts;
  - 110.37.c.4.E: make connections to personal experiences, ideas in other texts, and society;
  - 110.37.c.4.F: make inferences and use evidence to support understanding;
  - 110.37.c.4.G: evaluate details read to determine key ideas;
  - 110.37.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, and annotating when understanding breaks down.
- 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.37.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
  - 110.37.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
  - 110.37.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;

        - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
    - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.38.c.4.A: establish purpose for reading assigned and self-selected texts;
        - 110.38.c.4.E: make connections to personal experiences, ideas in other texts, and society;
        - 110.38.c.4.F: make inferences and use evidence to support understanding;
        - 110.38.c.4.G: evaluate details read to understand key ideas;
        - 110.38.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, annotating, and using outside sources when understanding breaks down.
    - 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
        - 110.38.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
        - 110.38.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
        - 110.38.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- <u>English IV</u>
    - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
- 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
- 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

▪ 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.39.c.4.A: establish purpose for reading assigned and self-selected texts;
  - 110.39.c.4.E: make connections to personal experiences, ideas in other texts, and society;
  - 110.39.c.4.F: make inferences and use evidence to support understanding;
  - 110.39.c.4.G: evaluate details read to analyze key ideas;
  - 110.39.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, annotating, and using outside sources when understanding breaks down.
▪ 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.39.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
  - 110.39.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
  - 110.39.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

TEXAS FARM BUREAU®

Social Studies – No Social Studies TEKS

Mathematics

- Mathematical Models with Applications
  - 111.43.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
    - 111.43.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
  - 111.43.c.9: Mathematical modeling in social sciences. The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences. The student is expected to:
    - 111.43.c.9.A: interpret information from various graphs, including line graphs, bar graphs, circle graphs, histograms, scatterplots, dot plots, stem-and-leaf plots, and box and whisker plots, to draw conclusions from the data and determine the strengths and weaknesses of conclusions;
- Advanced Quantitative Reasoning
  - 111.44.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
    - 111.44.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
  - 111.44.c.2: Numeric reasoning. The student applies the process standards in mathematics to generate new understandings by extending existing knowledge. The student generates new mathematical understandings through problems involving numerical data that arise in everyday life, society, and the workplace. The student extends existing knowledge and skills to analyze real-world situations. The student is expected to:
    - 111.44.c.2.A: use precision and accuracy in real-life situations related to measurement and significant figures;

Science

- Environmental Systems
  - 112.50.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the

importance of scientific research and innovation on society. The student is expected to:

- 112.50.c.4.c: research and explore resources such as museums, planetariums, observatories, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers.

- 112.50.c.6: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
  - 112.50.c.6.a: compare and contrast land use and management methods and how they affect land attributes such as fertility, productivity, economic value, and ecological stability
- Science concepts. The student knows the relationship between carrying capacity and changes in populations and ecosystems. The student is expected to:
  - 112.50.c.8.b: identify factors that may alter carrying capacity such as disease; natural disaster; available food, water, and livable space; habitat fragmentation; and periodic changes in weather;
  - 112.50.c.8.c: calculate changes in population size in ecosystems
- 112.50.c.10: Science concepts. The student knows how humans impact environmental systems through emissions and pollutants. The student is expected to:
  - 112.50.c.10.A: identify sources of emissions in air, soil, and water, including point and nonpoint sources;
- 112.50.c.12: Science concepts. The student understands how ethics and economic priorities influence environmental decisions. The student is expected to:
  - 112.50.c.12.A: evaluate cost-benefit trade-offs of commercial activities such as municipal development, food production, deforestation, over-harvesting, mining, and use of renewable and non-renewable energy sources;
  - 112.50.c.12.C: analyze how ethical beliefs influence environmental scientific and engineering practices such as methods for food production, water distribution, energy production, and the extraction of minerals;

TEXAS FARM BUREAU®

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
    - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
        - 130.2.c.1.c: demonstrate knowledge of personal and occupational safety, environmental regulations, and first-aid policy in the workplace;
    - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
        - 130.2.c.4.a: define the scope of agriculture;
        - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
        - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
        - 130.2.c.4.d: identify potential future scenarios for agriculture, food, and natural resources systems, including global impacts;
        - 130.2.c.4.f: compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment,
    - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
        - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
        - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
    - 130.2.c.10: The student develops technical knowledge and skills related to soil systems. The student is expected to:
        - 130.2.c.10.a: identify the components and properties of soils;
        - 130.2.c.10.b: identify and describe the process of soil formation; and

        - 130.2.c.10.c: conduct experiments related to soil chemistry.
    - 130.2.c.15: The student explains the relationship between agriculture, food, and natural resources and the environment. The student is expected to:
        - 130.2.c.15.a: determine the effects of agriculture, food, and natural resources upon safety, health, and the environment;
        - 130.2.c.15.c: identify and design methods to maintain and improve safety, health, and environmental systems in agriculture, food, and natural resources;
        - 130.2.c.15.d: research and analyze alternative energy sources that stem from or impact agriculture, food, and natural resources; and
        - 130.2.c.15.e: evaluate energy and water conservation methods.
- Energy and Natural Resource Technology
    - 130.11.c.5: The student identifies water use and management in agricultural settings. The student is expected to:
        - 130.11.c.5.c: discuss how agricultural uses may impact water resources;
        - 130.11.c.5.f: evaluate how the different agricultural water uses may impact water availability; and
    - 130.11.c.7: The student examines soil erosion as related to agricultural production. The student is expected to:
        - 130.11.c.7.a: identify agricultural production practices that can contribute to soil erosion;
        - 130.11.c.7.b: analyze effects of soil erosion;
        - 130.11.c.7.d: identify soil erosion control methods and programs.
- Advanced Energy and Natural Resource Technology
    - 130.12.c.10: The student examines soil erosion as related to natural resource management and energy production. The student is expected to:
        - 130.12.c.10.b: analyze the components and functions of soils;
        - 130.12.c.10.d: compare soil erosion control methods.
- Wildlife, Fisheries, and Ecology Management

        - 130.17.c.6: The student examines natural cycles and ecological concepts. The student is expected to:
            - 130.17.c.6.a: explain the hydrologic, nitrogen, carbon, and nutrient cycles;
            - 130.17.c.6.b: evaluate the impact of natural cycles on succession;
            - 130.17.c.6.c: analyze the effects of natural cycles on population dynamics;
    - Range Ecology and Management
        - 130.19.c.5: The student analyzes the biotic and abiotic components of a rangeland. The student is expected to:
            - 130.19.c.5.a: discuss components of rangeland with an emphasis on soil;
        - 130.19.c.8: The student identifies methods of maintaining and improving rangeland for wildlife management. The student is expected to:
            - 130.19.c.8.b: identify plants species harmful to wildlife;
            - 130.19.c.8.c: analyze how wildlife species use range plants; and
    - Advanced Plant and Soil Science
        - 130.25.c.8: The student explains the relationship of biotic and abiotic factors within habitats and ecosystems. The student is expected to:
            - 130.25.c.8.c: evaluate the impact of human activity such as pest control, hydroponics, and sustainable agriculture on ecosystems; and
        - 130.25.c.9: The student analyzes soil science as it relates to food and fiber production. The student is expected to:
            - 130.25.c.9.c: recognize the importance of conservation of soil and agencies involved in conservation;
        - 130.25.c.10: The student describes the relationship between resources within environmental systems. The student is expected to:
            - 130.25.c.10.a: summarize methods of land use and management;
            - 130.25.c.10.b: identify sources, use, quality, and conservation of water;

- 130.25.c.10.c: explore the use and conservation of renewable and non-renewable resources;

FILLING THE GLOBAL GROCERY BAG

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.C: give a presentation using informal, formal, and technical language effectively to meet the needs of audience, purpose, and occasion, employing eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.36.c.11.A: develop questions for formal and informal inquiry
    - 110.36.c.11.E: locate relevant sources
    - 110.36.c.11.F: synthesize information from a variety of sources
    - 110.36.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;

- 110.37.c.1.C: give a formal presentation that incorporates a clear thesis and a logical progression of valid evidence from reliable sources and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
- 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.

▪ 110.37.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:

- 110.37.c.11.A: develop questions for formal and informal inquiry;
- 110.37.c.11.E: locate relevant sources;
- 110.37.c.11.F: synthesize information from a variety of sources;
- 110.37.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

○ <u>English III</u>

▪ 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
- 110.38.c.1.C: give a formal presentation that exhibits a logical structure, smooth transitions, accurate evidence, well-chosen details, and rhetorical devices and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
- 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making,

and evaluating the work of the group based on agreed-upon criteria.

- 110.38.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.38.c.11.A: develop questions for formal and informal inquiry;
  - 110.38.c.11.E: locate relevant sources;
  - 110.38.c.11.F: synthesize information from a variety of sources;
  - 110.38.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.39.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.39.c.11.A: develop questions for formal and informal inquiry;
    - 110.39.c.11.E: locate relevant sources;
    - 110.39.c.11.F: synthesize information from a variety of sources;
    - 110.39.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

Social Studies

- Economics with Emphasis on the Free Enterprise System and its Benefits

        - 113.31.c.6: Economics. The student understands the right to own, use, and dispose of private property. The student is expected to:
            - 113.31.c.6.B: identify and evaluate examples of restrictions that the government places on the use of business and individual property.
    - World Geography Studies
        - 113.43.c.11: Economics. The student understands how geography influences economic activities. The student is expected to:
            - 113.43.c.11.B: identify the factors affecting the location of different types of economic activities, including subsistence and commercial agriculture, manufacturing, and service industries; and
            - 113.43.c.11.C: assess how changes in climate, resources, and infrastructure (technology, transportation, and communication) affect the location and patterns of economic activities.
        - 113.43.c.16: Culture. The student understands how the components of culture affect the way people live and shape the characteristics of regions. The student is expected to:
            - 113.43.c.16.B: describe elements of culture, including language, religion, beliefs, institutions, and technologies; and
        - 113.43.c.18: Culture. The student understands the ways in which cultures change and maintain continuity. The student is expected to:
            - 113.43.c.18.D: evaluate the spread of cultural traits to find examples of cultural convergence and divergence such as the spread of democratic ideas, language, foods, technology, or global sports.

Mathematics – No Math TEKS

Science

- Environmental Systems
    - 112.50.c.6: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
        - 112.50.c.6.e: analyze and evaluate the economic significance and interdependence of resources within the local environmental system
        -

Agriculture, Food, and Natural Resources

- Principles of Agriculture
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.3: The student analyzes concepts related to global diversity. The student is expected to:
    - 130.2.c.3.a: compare and contrast global agricultural markets, currency, and trends; and
    - 130.2.c.3.b: evaluate marketing factors and practices that impact the global markets.
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;
    - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
    - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
    - 130.2.c.4.e: describe how emerging technologies and globalization impacts agriculture, food, and natural resources; and
    - 130.2.c.4.f: compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment,

FIND YOUR FUTURE CAREER

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.

- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

Social Studies

- United States History Studies Since 1877
  - 113.41.d.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
    - 113.41.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and

disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.E: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections between historical events over time;
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
  - 113.42.c.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
    - 113.42.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.D: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections over time;
    - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- Economics with Emphasis on the Free Enterprise System and Its Benefits

        - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
            - 113.31.d.21.A: analyze economic information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, and drawing inferences and conclusions;
            - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
    - Social Studies Advanced Studies
        - 113.60.c.1: The student will investigate, independently or collaboratively, a problem, issue, or concern within a selected profession or discipline. The student is expected to:
            - 113.60.c.1.A: analyze the relationship between his or her interests and career/discipline;

Mathematics – No Math TEKS

Science

- Biology:
    - 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
        - 112.42.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- Aquatic Science:
    - 112.47.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
        - 112.47.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers

- Environmental Systems:
  - 112.50.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.50.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- Earth Systems Science:
  - 112.49.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.49.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.a: identify career development, education, and entrepreneurship opportunities in the field of agriculture, food, and natural resources;
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
    - 130.2.c.1.e: identify careers in agriculture, food, and natural resources with required aptitudes in science, technology, engineering, mathematics, language arts, and social studies.
- Professional Standards in Agribusiness

        - 130.3.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
            - 130.3.c.1.a: identify career and entrepreneurship opportunities related to agribusiness;
            - 130.3.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in agriculture, food, and natural resources industries;
    - Agribusiness Management and Marketing
        - 130.4.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
            - 130.4.c.1.a: identify career and entrepreneurship opportunities related to agribusiness;
            - 130.4.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in agriculture, food, and natural resources industries;
    - Mathematical Applications in Agriculture, Food, and Natural Resources
        - 130.5.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
            - 130.5.c.1.A: identify career development and entrepreneurship opportunities;
            - 130.5.c.1.B: demonstrate competencies related to resources, information, interpersonal skills, and systems of operation;
    - Equine Science
        - 130.6.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
            - 130.6.c.1.a: identify career development and entrepreneurship opportunities in the field of equine science;
            - 130.6.c.1.b: demonstrate competencies related to resources, information, interpersonal skills, and systems of operation in equine science;
    - Livestock Production
        - 130.7.c.1: The student demonstrates professional standards/employability skills as required by business and industry The student is expected to:

        - 130.7.c.1.a: identify career development and entrepreneurship opportunities in the field of animal systems;
        - 130.7.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in animal systems;
    - Small Animal Management
        - 130.8.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
            - 130.8.c.1.a: identify career development and entrepreneurship opportunities in the field of specialty agricultural enterprises;
            - 130.8.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in specialty agricultural enterprises;
- Veterinary Medical Applications
    - 130.9.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.9.c.1.a: identify career development and entrepreneurship opportunities in the field of veterinary science;
        - 130.9.c.1.b: demonstrate competencies related to resources, information, interpersonal skills, and systems of operation in veterinary science;
- Advanced Animal Science
    - 130.10.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.10.c.1.a: identify career development and entrepreneurship opportunities in the field of animal systems;
        - 130.10.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in animal systems;
- Energy and Natural Resource Technology
    - 130.11.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:

        - 130.11.c.1.a: identify career development, education, and entrepreneurship opportunities in the field of energy and natural resources;
        - 130.11.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in energy and natural resources;
- Advanced Energy and Natural Resource Technology
    - 130.12.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.12.c.1.a: identify career development, education, and entrepreneurship opportunities in the field of energy and natural resources;
        - 130.12.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in energy and natural resources;
- Food Technology and Safety
    - 130.15.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.15.c.1.a: identify and locate career opportunities that appeal to personal career goals;
        - 130.15.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in food processing;
- Food Processing
    - 130.16.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.16.c.1.a: identify career development and entrepreneurship opportunities in the food processing industry, including the value-added products industry;
        - 130.16.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in the food processing industry, including the value-added products industry;
- Wildlife, Fisheries, and Ecology Management
    - 130.17.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:

        - 130.17.c.1.a: identify career development, education, and entrepreneurship opportunities in the field of natural resources;
        - 130.17.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in natural resources;
- Forestry and Woodland Ecosystems
    - 130.18.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.18.c.1.a: identify career development, education, and entrepreneurship opportunities in the field of forestry and woodland ecosystems;
        - 130.18.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in forestry and woodland ecosystems;
- Range Ecology and Management
    - 130.19.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.19.c.1.a: identify career development, education, and entrepreneurship opportunities in the field of environmental and natural resources;
        - 130.19.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in environmental and natural resources;
- Floral Design
    - 130.20.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.20.c.1.a: identify career development and entrepreneurship opportunities in the field of floral design and interior landscape development;
        - 130.20.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in floral design and interior landscape development;
- Landscape Design and Management
    - 130.21.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:

        - 130.21.c.1.a: identify career development and entrepreneurship opportunities in the field of landscape design and management;
        - 130.21.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in landscape design and management;
- Turf Grass Management
    - 130.22.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.22.c.1.a: identify career development and entrepreneurship opportunities in the field of turf grass management;
        - 130.22.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in turf grass management;
- Horticulture Science
    - 130.23.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.23.c.1.a: identify career development and entrepreneurship opportunities in the field of horticulture;
        - 130.23.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in horticulture;
- Greenhouse Operation and Production
    - 130.24.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.24.c.1.a: identify career development and entrepreneurship opportunities in the field of greenhouse operations and production;
        - 130.24.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, and critical thinking in greenhouse operations and production;
- Advanced Plant and Soil Science

        - 130.25.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
            - 130.25.c.1.a: identify career development and entrepreneurship opportunities in the field of plant systems;
            - 130.25.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in plant systems;
- Agricultural Mechanics and Metal Technologies
    - 130.26.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.26.c.1.a: identify career development and entrepreneurship opportunities in the field of power, structural, and technical agricultural systems;
        - 130.26.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation of power, structural, and technical agricultural systems;
- Agricultural Structures Design and Fabrication
    - 130.27.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.27.c.1.a: identify career development and entrepreneurship opportunities in the field of mechanized agriculture;
        - 130.27.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation of mechanized agriculture;
- Agricultural Equipment Design and Fabrication
    - 130.28.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.28.c.1.a: identify career development and entrepreneurship opportunities in the field of mechanized agriculture;
        - 130.28.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation of mechanized agriculture;

- Agricultural Power Systems
    - 130.29.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.29.c.1.a: identify career development and entrepreneurship opportunities in the field of power, structural, and technical systems;
        - 130.29.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, and critical thinking in power, structural, and technical systems;
- Agricultural Laboratory and Field Experience
    - 130.30.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.30.c.1.a: investigate career development and entrepreneurship opportunities in agriculture, food, and natural resources;
        - 130.30.c.1.b: apply competencies related to resources, information, and interpersonal skills;

FOOD SCIENCE: BREAD DOUGH CHALLENGE

English Language Arts and Reading

- English I
    - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
    - 110.36.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
        - 110.36.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:

- 110.36.c.9.B.i: using an organizing structure appropriate to purpose, audience, topic, and context;

- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.37.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
    - 110.37.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
      - 110.37.c.9.B.i: using an organizing structure appropriate to purpose, audience, topic, and context;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.38.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:

- 110.38.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
    - 110.38.c.9.B.i: using strategic organizational structures appropriate to purpose, audience, topic, and context;

- English IV
    - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
    - 110.39.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
        - 110.39.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
            - 110.39.c.9.B.i: using strategic organizational structures appropriate to purpose, audience, topic, and context;

Social Studies

- World History Studies
    - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
        - 113.42.d.28.E: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions,

drawing inferences and conclusions, and developing connections between historical events over time;

- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.D: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections over time;
- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.31.d.21.A: analyze economic information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, and drawing inferences and conclusions;

Math – No Math TEKS

Science

- Biology:
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.42.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
    - 112.42.c.1.D: use appropriate tools such as microscopes, slides, Petri dishes, laboratory glassware, metric rulers,

digital balances, pipets, filter paper, micropipettes, gel electrophoresis and polymerase chain reaction (PCR) apparatuses, microcentrifuges, water baths, incubators, thermometers, hot plates, data collection probes, test tube holders, lab notebooks or journals, hand lenses, and models, diagrams, or samples of biological specimens or structures
    - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.42.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
- 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.42.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
- 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.42.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
    - 112.42.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- 112.42.c.5: Biological Structures, Functions, and Processes: The student knows that biological structures at multiple levels of organization perform specific functions and processes that affect life. The student is expected to:

        - 112.42.c.5.C: investigate homeostasis through the cellular transport of molecules
    - 112.42.c.12: Science concepts--biological structures, functions, and processes. The student knows that multicellular organisms are composed of multiple systems that interact to perform complex functions. The student is expected to:
        - 112.42.c.12.B: explain how the interactions that occur among systems that perform functions of transport, reproduction, and response in plants are facilitated by their structures
- Earth Systems Science:
    - 112.49.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.49.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.49.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
        - 112.49.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
        - 112.49.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
        - 112.49.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
    - 112.49.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
        - 112.49.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories

- 112.49.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
  - 112.49.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
  - 112.49.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- 112.49.c.12: Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:
  - 112.49.c.12.A: evaluate the impact on humans of natural changes in Earth's systems such as earthquakes, tsunamis, and volcanic eruptions
  - 112.49.c.12.C: analyze the natural and anthropogenic factors that affect the severity and frequency of extreme weather events and the hazards associated with these events

Agriculture, Food, and Natural Resources

- Food Technology and Safety
  - 130.15.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.15.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in food processing;
  - 130.15.c.3: The student explains the impact of food science systems. The student is expected to:
    - 130.15.c.3.a: explain the significance of food science systems;
    - 130.15.c.3.d: evaluate the relationship between biotechnology and the food science industry.
  - 130.15.c.4: The student analyzes the nutritive value of food constituents. The student is expected to:

- 130.15.c.4.a: define the terms used in food technology;

- Food Processing
  - 130.16.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.16.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in the food processing industry, including the value-added products industry;
  - 130.16.c.4: The student understands consumer satisfaction issues. The student is expected to:
    - 130.16.c.4.a: practice equipment maintenance and sanitation procedures;
    - 130.16.c.4.b: explain the factors that affect food palatability;
  - 130.16.c.5: The student understands quality control issues in food processing. The student is expected to:
    - 130.16.c.5.a: practice procedures relating to the safe manufacture of foods through hygienic food handling and processing;

FROM BOOM TO DUST

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts

that are legible and use appropriate conventions. The student is expected to:

- 110.36.c.9.A: plan a piece of writing appropriate for various purposes and audiences by generating ideas through a range of strategies such as brainstorming, journaling, reading, or discussing
- 110.36.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
- 110.36.c.9.B.i: using an organizing structure appropriate to purpose, audience, topic, and context; and
- 110.36.c.9.B.ii: developing an engaging idea reflecting depth of thought with specific details, examples, and commentary;

- 110.36.c.10: Composition: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to:
  - 110.36.c.10.C: compose argumentative texts using genre characteristics and craft; and

- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
    - using acquired content and academic vocabulary as appropriate;
  - 110.37.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
    - 110.37.c.9.A: plan a piece of writing appropriate for various purposes and audiences by generating ideas

through a range of strategies such as brainstorming, journaling, reading, or discussing;
- 110.37.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
- 110.37.c.9.B.i: using an organizing structure appropriate to purpose, audience, topic, and context; and
- 110.37.c.9.B.ii: developing an engaging idea reflecting depth of thought with specific details, examples, and commentary;

- 110.37.c.10: Composition: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to:
  - 110.37.c.10.C: compose argumentative texts using genre characteristics and craft; and

- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.38.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
    - 110.38.c.9.A: plan a piece of writing appropriate for various purposes and audiences by generating ideas through a range of strategies such as brainstorming, journaling, reading, or discussing;

- 110.38.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
- 110.38.c.9.B.i: using strategic organizational structures appropriate to purpose, audience, topic, and context;
- 110.38.c.9.B.ii: developing an engaging idea reflecting depth of thought with effective use of rhetorical devices, details, examples, and commentary;

- 110.38.c.10: Composition: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to:
- 110.38.c.10.C: compose argumentative texts using genre characteristics and craft;

- English IV
- 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
- 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
- 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

- 110.39.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
- 110.39.c.9.A: plan a piece of writing appropriate for various purposes and audiences by generating ideas through a range of strategies such as brainstorming, journaling, reading, or discussing;
- 110.39.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:

        - 110.39.c.9.B.i: using strategic organizational structures appropriate to purpose, audience, topic, and context; and
        - 110.39.c.9.B.ii: developing an engaging idea reflecting depth of thought with effective use of rhetorical devices, details, examples, and commentary;
    - 110.39.c.10: Composition: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to:
        - 110.39.c.10.C: compose argumentative texts using genre characteristics and craft;

Social Studies – No Social Studies TEKS
Mathematics – No Math TEKS
Science

- Earth Systems Science
    - 112.49.c.9: Science concepts. The student knows that the lithosphere continuously changes as a result of dynamic and complex interactions among Earth's systems. The student is expected to:
        - 112.49.c.9.c: model the processes of mass wasting, erosion, and deposition by water, wind, ice, glaciation, gravity, and volcanism in constantly reshaping Earth's surface
- United States History Studies Since 1877
    - 113.41.c.2: History. The student understands traditional historical points of reference in U.S. history from 1877 to the present. The student is expected to:
        - 113.41.c.2.B: explain the significance of the following years as turning points: 1898 (Spanish-American War), 1914-1918 (World War I), 1929 (the Great Depression begins), 1939-1945 (World War II), 1957 (Sputnik launch ignites U.S.-Soviet space race), 1968 (Martin Luther King Jr. assassination), 1969 (U.S. lands on the moon), 1991 (Cold War ends), 2001 (terrorist attacks on World Trade Center and the Pentagon), and 2008 (election of first black president, Barack Obama).
    - 113.41.c.12: Geography. The student understands the impact of geographic factors on major events. The student is expected to analyze the impact of physical and human geographic factors on the Klondike Gold Rush, the Panama Canal, the Dust Bowl, and the levee failure in New Orleans after Hurricane Katrina.

Agriculture Food and Natural Resources

- Principles of Agriculture
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;
    - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
    - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
  - 130.2.c.10: The student develops technical knowledge and skills related to soil systems. The student is expected to:
    - 130.2.c.10.b: identify and describe the process of soil formation; and
- Advanced Plant and Soil Science
  - 130.25.c.9: The student analyzes soil science as it relates to food and fiber production. The student is expected to:
    - 130.25.c.9.c: recognize the importance of conservation of soil and agencies involved in conservation

FROM TECHNIQUES TO TRAITS

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;

        - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
    - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.36.c.4.G: evaluate details read to determine key ideas;
    - 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
        - 110.36.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- English II
    - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
    - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.37.c.4.G: evaluate details read to determine key ideas;
    - 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
        - 110.37.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- English III
    - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral

language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

- 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.38.c.4.G: evaluate details read to understand key ideas;
- 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.38.c.5.F: respond using acquired content and academic vocabulary as appropriate;

- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.39.c.4.G: evaluate details read to analyze key ideas;
  - 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.39.c.5.F: respond using acquired content and academic vocabulary as appropriate;

Social Studies
- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

Math – No Math TEKS
Science
- Biology:
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations

    - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
- 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.42.c.3.C: engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence
- 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.42.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
    - 112.42.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- 112.42.c.7: Mechanisms of Genetics: The student knows the role of nucleic acids in gene expression. The student is expected to:
    - 112.42.c.7.B: describe the significance of gene expression and explain the process of protein synthesis using models of DNA and ribonucleic acid (RNA)
- 112.42.c.8: Mechanisms of Genetics: The student knows the role of nucleic acids and the principles of inheritance and variation of traits in Mendelian and non-Mendelian genetics. The student is expected to:
    - 112.42.c.8.A: analyze the significance of chromosome reduction, independent assortment, and crossing over during meiosis in increasing diversity in populations of organisms that reproduce sexually

        - 112.42.c.8.B: predict possible outcomes of various genetic combinations using monohybrid and dihybrid crosses, including non-Mendelian traits of incomplete dominance, codominance, sex-linked traits, and multiple alleles
    - 112.42.c.10: Biological Evolution. The student knows evolutionary theory is a scientific explanation for the unity and diversity of life that has multiple mechanisms. The student is expected to:
        - 112.42.c.10.A: analyze and evaluate how natural selection produces change in populations and not in individuals
        - 112.42.c.10.B: analyze and evaluate how the elements of natural selection, including inherited variation, the potential of a population to produce more offspring than can survive, and a finite supply of environmental resources, result in differential reproductive success
        - 112.42.c.10.C: analyze and evaluate how natural selection may lead to speciation
        - 112.42.c.10.D: analyze evolutionary mechanisms other than natural selection, including genetic drift, gene flow, mutation, and genetic recombination, and their effect on the gene pool of a population
    - 112.42.c.13: Interdependence Within Environmental Systems. The student knows that organisms have an organizational structure and variations can influence survival of populations. The student is expected to:
        - 112.42.c.13.D: explain how environmental change, including change due to human activity, affects biodiversity and analyze how changes in biodiversity impact ecosystem stability

Agriculture, Food, and Natural Resources

- Advanced Plant and Soil Science
    - 130.25.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.25.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in plant systems;

- 130.25.c.17: The student diagrams the structure and function of nucleic acids in the mechanism of genetics. The student is expected to:
  - 130.25.c.17.a: describe components of deoxyribonucleic acid (DNA) and illustrate how information for specifying the traits of an organism is carried in DNA;
  - 130.25.c.17.b: identify and illustrate how changes in DNA cause phenotypic or genotypic changes;

GEOGRAPHY AND CLIMATE FOR AGRICULTURAL LANDSCAPES

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.C: give a presentation using informal, formal, and technical language effectively to meet the needs of audience, purpose, and occasion, employing eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.36.c.4.E: create mental images to deepen understanding;
    - 110.36.c.4.G: evaluate details read to determine key ideas;
  - 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds

to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.36.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
- 110.36.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
- 110.36.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

▪ 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:

- 110.36.c.11.E: locate relevant sources;
- 110.36.c.11.F: synthesize information from a variety of sources;
- 110.36.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

○ English II

▪ 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
- 110.37.c.1.C: give a formal presentation that incorporates a clear thesis and a logical progression of valid evidence from reliable sources and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
- 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.

▪ 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses

metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.37.c.4.E: make connections to personal experiences, ideas in other texts, and society;
    - 110.37.c.4.G: evaluate details read to determine key ideas;
- 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.37.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
    - 110.37.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
    - 110.37.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- 110.37.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.37.c.11.E: locate relevant sources;
    - 110.37.c.11.F: synthesize information from a variety of sources;
    - 110.37.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

- English III
    - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
        - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
        - 110.38.c.1.C: give a formal presentation that exhibits a logical structure, smooth transitions, accurate evidence, well-chosen details, and rhetorical devices and that employs eye contact, speaking rate such as pauses for

effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
- 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

- 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.38.c.4.E: make connections to personal experiences, ideas in other texts, and society;
  - 110.38.c.4.G: evaluate details read to understand key ideas;
- 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.38.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
  - 110.38.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
  - 110.38.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- 110.38.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.38.c.11.E: locate relevant sources;
  - 110.38.c.11.F: synthesize information from a variety of sources;
  - 110.38.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

- <u>English IV</u>
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.39.c.1.C: formulate sound arguments and present using elements of classical speeches such as introduction, first and second transitions, body, conclusion, the art of persuasion, rhetorical devices, employing eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
- 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.39.c.4.E: make connections to personal experiences, ideas in other texts, and society;
    - 110.39.c.4.G: evaluate details read to analyze key ideas;
- 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.39.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
    - 110.39.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
    - 110.39.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- 110.39.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:

- 110.39.c.11.E: locate relevant sources;
- 110.39.c.11.F: synthesize information from a variety of sources;
- 110.39.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

Social Studies

- World History Studies
  - 113.42.c.29: Social studies skills. The student uses geographic skills and tools to collect, analyze, and interpret data. The student is expected to:
    - 113.42.c.29.A: create and interpret thematic maps, graphs, and charts to demonstrate the relationship between geography and the historical development of a region or nation; and
    - 113.42.c.29.B: analyze and compare geographic distributions and patterns in world history shown on maps, graphs, charts, and models.
- World Geography Studies
  - 113.43.c.9: Geography. The student understands the concept of region as an area of Earth's surface with related geographic characteristics. The student is expected to:
    - 113.43.c.9.A: identify physical and/or human factors such as climate, vegetation, language, trade networks, political units, river systems, and religion that constitute a region; and

Mathematics – No Math TEKS

Science – No Science TEKS

Agriculture, Food, and Natural Resources

- Principles of Agriculture
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;

- 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
- 130.2.c.4.f: compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment,

- 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
  - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
  - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
- 130.2.c.10: The student develops technical knowledge and skills related to soil systems. The student is expected to:
  - 130.2.c.10.a: identify the components and properties of soils;

- Advanced Plant and Soil Science
  - 130.25.c.9: The student analyzes soil science as it relates to food and fiber production. The student is expected to:
    - 130.25.c.9.b: evaluate the properties and nature of soils;
  - 130.25.c.10: The student describes the relationship between resources within environmental systems. The student is expected to:
    - 130.25.c.10.d: analyze and evaluate the economic significance and interdependence of components of the environment;

GLOBAL TRADE AND INTERDEPENDENCE

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information,

developing a plan for consensus building, and setting ground rules for decision making.

- 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.36.c.4.G: evaluate details read to determine key ideas;
  - 110.36.c.4.H: synthesize information from two texts to create new understanding;
- 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.36.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order
- 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.36.c.11.A: develop questions for formal and informal inquiry
  - 110.36.c.11.E: locate relevant sources
  - 110.36.c.11.F: synthesize information from a variety of sources
  - 110.36.c.11.G: examine sources for:
    - 110.36.c.11.G.i: credibility and bias, including omission

- <u>English II</u>
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.

        - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
            - 110.37.c.4.G: evaluate details read to determine key ideas;
            - 110.37.c.4.H: synthesize information from multiple texts to create new understanding;
        - 110.37.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
            - 110.37.c.11.A: develop questions for formal and informal inquiry;
            - 110.37.c.11.E: locate relevant sources;
            - 110.37.c.11.F: synthesize information from a variety of sources;
            - 110.37.c.11.G: examine sources for:
            - 110.37.c.11.G.i: credibility and bias, including omission;
    - English III
        - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
            - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
            - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
            - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
        - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
            - 110.38.c.4.G: evaluate details read to understand key ideas;

        - 110.38.c.4.H: synthesize information from a variety of text types to create new understanding
    - 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
        - 110.38.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order
    - 110.38.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
        - 110.38.c.11.A: develop questions for formal and informal inquiry;
        - 110.38.c.11.E: locate relevant sources;
        - 110.38.c.11.F: synthesize information from a variety of sources;
        - 110.38.c.11.G: examine sources for:
            - 110.38.c.11.G.i: credibility, bias, and accuracy
- English IV
    - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
        - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
        - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
    - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.39.c.4.G: evaluate details read to analyze key ideas;

        - 110.39.c.4.H: synthesize information from a variety of text types to create new understanding;
    - 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
        - 110.39.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
    - 110.39.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
        - 110.39.c.11.A: develop questions for formal and informal inquiry;
        - 110.39.c.11.E: locate relevant sources;
        - 110.39.c.11.F: synthesize information from a variety of sources;
        - 110.39.c.11.G: examine sources for:
            - 110.39.c.11.G.i: credibility, bias, and accuracy

Social Studies

- World History Studies
    - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
        - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- World Geography Studies
    - 113.43.d.11: Economics. The student understands how geography influences economic activities. The student is expected to:
        - 113.43.d.11.B: identify the factors affecting the location of different types of economic activities, including subsistence and commercial agriculture, manufacturing, and service industries;
    - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:

        - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- Economics with Emphasis on the Free Enterprise System and Its Benefits
    - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
        - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

Math – No Math TEKS

Science

- Biology:
    - 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
        - 112.42.c.4.B: relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content
        - 112.42.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
    - 112.42.c.13: Interdependence Within Environmental Systems. The student knows that organisms have an organizational structure and variations can influence survival of populations. The student is expected to:
        - 112.42.c.13.D: explain how environmental change, including change due to human activity, affects biodiversity and analyze how changes in biodiversity impact ecosystem stability
- Earth Systems Science:
    - 112.49.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
        - 112.49.c.4.B: relate the impact of past and current research on scientific thought and society, including

research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content
    - 112.49.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- 112.49.c.6: Science concepts. The student knows the evidence for the formation and composition of Earth's atmosphere, hydrosphere, biosphere, and geosphere. The student is expected to:
    - 112.49.c.6.A: describe how impact accretion, gravitational compression, radioactive decay, and cooling differentiated proto-Earth into layers
    - 112.49.c.6.B: evaluate the roles of volcanic outgassing and water bearing comets in developing Earth's atmosphere and hydrosphere
    - 112.49.c.6.C: evaluate the evidence for changes to the chemical composition of Earth's atmosphere prior to the introduction of oxygen
    - 112.49.c.6.D: evaluate scientific hypotheses for the origin of life through abiotic chemical processes
    - 112.49.c.6.E: describe how the production of oxygen by photosynthesis affected the development of the atmosphere, hydrosphere, geosphere, and biosphere
- 112.49.c.8: Science concepts. The student knows how the Earth's interior dynamics and energy flow drive geological processes on Earth's surface. The student is expected to:
    - 112.49.c.8.D: describe how heat and rock composition affect density within Earth's interior and how density influences the development and motion of Earth's tectonic plates
- 112.49.c.12: Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:
    - 112.49.c.12.A: evaluate the impact on humans of natural changes in Earth's systems such as earthquakes, tsunamis, and volcanic eruptions
    - 112.49.c.12.C: analyze the natural and anthropogenic factors that affect the severity and frequency of extreme

weather events and the hazards associated with these events
- 112.49.c.13: Science concepts. The student explores global policies and careers related to the life cycles of Earth's resources. The student is expected to:
  - 112.49.c.13.A: analyze the policies related to resources from discovery to disposal, including economics, health, technological advances, resource type, concentration and location, waste disposal and recycling, mitigation efforts, and environmental impacts
  - 112.49.c.13.B: explore global and Texas-based careers that involve the exploration, extraction, production, use, disposal, regulation, and protection of Earth's resources

Agriculture, Food, and Natural Resources
- Principles of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.3: The student analyzes concepts related to global diversity. The student is expected to:
    - 130.2.c.3.a: compare and contrast global agricultural markets, currency, and trends; and
    - 130.2.c.3.b: evaluate marketing factors and practices that impact the global markets.
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
    - 130.2.c.4.d: identify potential future scenarios for agriculture, food, and natural resources systems, including global impacts;
- Agribusiness Management and Marketing
  - 130.4.c.3: The student recognizes roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment. The student is expected to:
    - 130.4.c.3.b: demonstrate an understanding of the global context of agricultural industries and careers; and

- Food Technology and Safety
  - 130.15.c.3: The student explains the impact of food science systems. The student is expected to:
    - 130.15.c.3.b: define trends in food production, world population, and supply and demand for food products;
- Food Processing
  - 130.16.c.3: The student knows the relationship of the food processing industry to the free enterprise system. The student is expected to:
    - 130.16.c.3.a: explain the importance of the food processing industry in the free enterprise system; and
    - 130.16.c.3.b: explain trends in the consumption of food products.

GPS AND GIS TECHNOLOGY IN AGRICULTURE

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.36.c.4.G: evaluate details read to determine key ideas;
  - 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.36.c.5.F: respond using acquired content and academic vocabulary as appropriate;

- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.37.c.4.G: evaluate details read to determine key ideas;
  - 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.37.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.38.c.4.G: evaluate details read to understand key ideas;
  - 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.38.c.5.F: respond using acquired content and academic vocabulary as appropriate;

- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.39.c.4.G: evaluate details read to analyze key ideas;
  - 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.39.c.5.F: respond using acquired content and academic vocabulary as appropriate;

Social Studies

- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.22: Social studies skills. The student communicates in written, oral, and visual forms. The student is expected to:
    - 113.31.d.22.A: use social studies terminology correctly;
- United States History Since 1877
  - 113.41.d.26: Science, technology, and society. The student understands the impact of science, technology, and the free enterprise system on the economic development of the United States. The student is expected to:
    - 113.41.d.26.A: explain the effects of scientific discoveries and technological innovations such as electric power, telephone and satellite communications, petroleum-based products, steel production, and computers on the economic development of the United States;
    - 113.41.d.26.C: describe the effect of technological innovations in the workplace such as assembly line manufacturing and robotics.

- 113.41.d.29: Social studies skills. The student communicates in written, oral, and visual forms. The student is expected to:
  - 113.41.d.29.B: use social studies terminology correctly;

- World History Studies
  - 113.42.d.27: Science, technology, and society. The student understands how major scientific and mathematical discoveries and technological innovations have affected societies from 1750 to the present. The student is expected to:
    - 113.42.d.27.D: explain the role of telecommunication technology, computer technology, transportation technology, and medical advancements in developing the modern global economy and society;
  - 113.42.d.30: Social studies skills. The student communicates in written, oral, and visual forms. The student is expected to:
    - 113.42.d.30.A: use social studies terminology correctly;
- World Geography Studies
  - 113.43.d.20: Science, technology, and society. The student understands how current technology affects human interaction. The student is expected to:
    - 113.43.d.20.A: describe the impact of new information technologies such as the Internet, Global Positioning System (GPS), or Geographic Information Systems (GIS);
  - 113.43.d.22: Social studies skills. The student communicates in written, oral, and visual forms. The student is expected to:
    - 113.43.d.22.C: use social studies terminology correctly;

Mathematics – No Math TEKS

Science

- Biology:
  - 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.42.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- Earth Systems Science:
  - 112.49.c.12: Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:

- 112.49.c.12.A: evaluate the impact on humans of natural changes in Earth's systems such as earthquakes, tsunamis, and volcanic eruptions
- 112.49.c.12.C: analyze the natural and anthropogenic factors that affect the severity and frequency of extreme weather events and the hazards associated with these events

- Aquatic Science:
  - 112.47.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.47.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
  - 112.47.c.6: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
    - 112.47.c.6.C: evaluate environmental data using technology such as maps, visualizations, satellite data, Global Positioning System (GPS), Geographic Information System (GIS), weather balloons, and buoys to model the interactions that affect aquatic ecosystems
- Environmental Systems:
  - 112.50.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.50.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
  - 112.50.c.13: Science concepts. The student knows how legislation mediates human impacts on the environment. The student is expected to:
    - 112.50.c.13.A: describe past and present state and national legislation, including Texas automobile emissions regulations, the National Park Service Act, the Clean Air Act, the Clean Water Act, the Soil and Water Resources Conservation Act, and the Endangered Species Act

- 112.50.c.13.B: evaluate the goals and effectiveness of past and present international agreements such as the environmental Antarctic Treaty System, the Montreal Protocol, the Kyoto Protocol, and the Paris Climate Accord

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.a: identify career development, education, and entrepreneurship opportunities in the field of agriculture, food, and natural resources;
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;
    - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
    - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
    - 130.2.c.4.d: identify potential future scenarios for agriculture, food, and natural resources systems, including global impacts;
    - 130.2.c.4.e: describe how emerging technologies and globalization impacts agriculture, food, and natural resources; and
    - 130.2.c.4.f: compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment,
  - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
    - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
    - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
  - 130.2.c.9: The student uses information technology tools to access, manage, integrate, and create information related to

agriculture, food, and natural resources. The student is expected to:

- 130.2.c.9.c: analyze the benefits and limitations of emerging technology such as online mapping systems, drones, and robotics; and
- 130.2.c.9.d: explain the benefits of computer-based and mobile application equipment in agriculture, food, and natural resources.

GROWING A NATION ERA 1B: COTTON'S AMERICAN JOURNEY

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.36.c.4.G: evaluate details read to determine key ideas;
  - 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.36.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information,

developing a plan for consensus building, and setting ground rules for decision making.

- 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.37.c.4.G: evaluate details read to determine key ideas;
- 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.37.c.5.F: respond using acquired content and academic vocabulary as appropriate;

- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.38.c.4.G: evaluate details read to understand key ideas;
  - 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.38.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

        - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
    - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.39.c.4.G: evaluate details read to analyze key ideas;
    - 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
        - 110.39.c.5.F: respond using acquired content and academic vocabulary as appropriate;

Social Studies

- United States History Studies Since 1877
    - 113.41.d.26: Science, technology, and society. The student understands the impact of science, technology, and the free enterprise system on the economic development of the United States. The student is expected to:
        - 113.41.d.26.B: explain how specific needs result in scientific discoveries and technological innovations in agriculture, the military, and medicine;
- World History Studies
    - 113.42.d.27: Science, technology, and society. The student understands how major scientific and mathematical discoveries and technological innovations have affected societies from 1750 to the present. The student is expected to:
        - 113.42.d.27.A: explain the role of textile manufacturing, steam technology, development of the factory system, and transportation technology in the Industrial Revolution;
- World Geography Studies
    - 113.43.d.8: Geography. The student understands how people, places, and environments are connected and interdependent. The student is expected to:
        - 113.43.d.8.A: compare ways that humans depend on, adapt to, and modify the physical environment, including the influences of culture and technology;

        - 113.43.d.19: Science, technology, and society. The student understands the impact of technology and human modifications on the physical environment. The student is expected to:
            - 13.43.d.19.C: analyze the environmental, economic, and social impacts of advances in technology on agriculture and natural resources;
    - Ethnic Studies: African American Studies
        - 113.51.c.1: History. The student understands the influential historical points of reference in African history prior to 1619. The student is expected to:
            - 113.51.c.1.A: identify the major eras, civilizations, and contributions of African history that are foundational to humanity and predate American slavery;
        - 113.51.c.7: Geography. The student understands the impact of geographic factors on major events related to African Americans over time. The student is expected to:
            - 113.51.c.7.B: identify and explain the physical and human geographic factors that contributed to the Atlantic Slave Trade, the rise of the plantation system in the South, the development of textile mills in the North, and economic interdependence between the North and South;
        - 113.51.c.8: Economics. The student understands ways in which African Americans have addressed opportunities, challenges, and strategies concerning economic well-being over time. The student is expected to:
            - 113.51.c.8.A: analyze the effects of the Industrial Revolution and the roles of "King Cotton" and the cotton gin in the economies of the United States and the world;

Math – No Math TEKS

Science

- Environmental System:
    - 112.50.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
        - 112.50.c.4.B: relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content
        - 112.50.c.4.C: research and explore resources such as museums, libraries, professional organizations, private

companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers

- 112.50.c.12: Science concepts. The student understands how ethics and economic priorities influence environmental decisions. The student is expected to:
  - 112.50.c.12.E: argue from evidence whether or not a healthy economy and a healthy environment are mutually exclusive
- 112.50.c.13: Science concepts. The student knows how legislation mediates human impacts on the environment. The student is expected to:
  - 112.50.c.13.A: describe past and present state and national legislation, including Texas automobile emissions regulations, the National Park Service Act, the Clean Air Act, the Clean Water Act, the Soil and Water Resources Conservation Act, and the Endangered Species Act
  - 112.50.c.13.B: evaluate the goals and effectiveness of past and present international agreements such as the environmental Antarctic Treaty System, the Montreal Protocol, the Kyoto Protocol, and the Paris Climate Accord

- Earth Systems Science:
  - 112.49.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.49.c.4.B: relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content
    - 112.49.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
  - 112.49.c.6: Science concepts. The student knows the evidence for the formation and composition of Earth's atmosphere, hydrosphere, biosphere, and geosphere. The student is expected to:
    - 112.49.c.6.A: describe how impact accretion, gravitational compression, radioactive decay, and cooling differentiated proto-Earth into layers

- 112.49.c.6.B: evaluate the roles of volcanic outgassing and water bearing comets in developing Earth's atmosphere and hydrosphere
- 112.49.c.6.C: evaluate the evidence for changes to the chemical composition of Earth's atmosphere prior to the introduction of oxygen
- 112.49.c.6.D: evaluate scientific hypotheses for the origin of life through abiotic chemical processes
- 112.49.c.6.E: describe how the production of oxygen by photosynthesis affected the development of the atmosphere, hydrosphere, geosphere, and biosphere

▪ 112.49.c.8: Science concepts. The student knows how the Earth's interior dynamics and energy flow drive geological processes on Earth's surface. The student is expected to:
- 112.49.c.8.D: describe how heat and rock composition affect density within Earth's interior and how density influences the development and motion of Earth's tectonic plates

▪ 112.49.c.11: Science concepts. The student knows that dynamic and complex interactions among Earth's systems produce climate and weather. The student is expected to:
- 112.49.c.11.C: model how greenhouse gases trap thermal energy near Earth's surface

▪ 112.49.c.12: Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:
- 112.49.c.12.A: evaluate the impact on humans of natural changes in Earth's systems such as earthquakes, tsunamis, and volcanic eruptions
- 112.49.c.12.C: analyze the natural and anthropogenic factors that affect the severity and frequency of extreme weather events and the hazards associated with these events

<u>Agriculture, Food, and Natural Resources</u>

○ <u>Principles of Agriculture, Food, and Natural Resources</u>

▪ 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
- 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical

thinking, and systems of operation in agriculture, food, and natural resources;

- 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
  - 130.2.c.4.a: define the scope of agriculture;
  - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
  - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
- 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
  - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
  - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
- 130.2.c.11: The student develops technical knowledge and skills related to plant systems. The student is expected to:
  - 130.2.c.11.a: describe the structure and functions of plant parts;
  - 130.2.c.11.d: identify plants of importance to agriculture, food, and natural resources; and

HEN HOUSE ENGINEERING

- English Language Arts and Reading

English I

- 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
  - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
  - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.36.c.5.C: use text evidence and original commentary to support a comprehensive response;
- 110.36.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.37.c.5.C: use text evidence and original commentary to support an interpretive response;
    - 110.37.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

- 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.38.c.5.C: use text evidence and original commentary to support an analytic response;
  - 110.38.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.39.c.5.C: use text evidence and original commentary to support an evaluative response;
    - 110.39.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

Social Studies

- Economics with Emphasis on the Free Enterprise System and its Benefits
  - 113.31.c.1: Economics. The student understands the concepts of scarcity and opportunity costs. The student is expected to:
    - 113.31.c.1.C: describe the economic factors of production: land, labor, capital, and entrepreneurship; and

- 113.31.c.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

Mathematics – No Math TEKS

Science

- Environmental Systems
  - 112.50.c.12: Science concepts. The student understands how ethics and economic priorities influence environmental decisions. The student is expected to:
    - 112.50.c.12.d: discuss the impact of research and technology on social ethics and legal practices in situations such as the design of new buildings, recycling, or emission standards

Agriculture, Food, and Natural Resources

- Principles of Agriculture
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;
    - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
    - 130.2.c.4.e: describe how emerging technologies and globalization impacts agriculture, food, and natural resources; and
    - 130.2.c.4.f: compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment,
  - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:

        - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
        - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
    - 130.2.c.12: The student develops technical knowledge and skills related to animal systems. The student is expected to:
        - 130.2.c.12.a: describe animal growth and development;
        - 130.2.c.12.c: identify and evaluate breeds and classes of livestock; and
        - 130.2.c.12.d: explain animal selection, reproduction, breeding, and genetics.
    - 130.2.c.13: The student describes the principles of food products and processing
        - 130.2.c.13.a: evaluate food products and processing systems;
        - 130.2.c.13.b: determine trends in world food production;
        - 130.2.c.13.c: discuss current issues in food production; and
- Livestock Production
    - 130.7.c.10: The student plans for dynamic changes in business operation. The student is expected to:
        - 130.7.c.10.a: design, conduct, and complete research to identify and solve livestock management problems; and
- Small Animal Management
    - 130.8.c.3: The student describes the importance of responsible small animal ownership. The student is expected to:
        - 130.8.c.3.b: identify the influence small animals have on society;
        - 130.8.c.3.c: describe the importance of the small animal industry;
        - 130.8.c.3.d: describe the obligations and benefits of small animal ownership; and
        - 130.8.c.3.e: discuss the use and services provided by small animals.
    - 130.8.c.4: The student learns the hazards associated with working in the small animal industry. The student is expected to:
        - 130.8.c.4.c: describe methods of preventing the spread of disease;
    - 130.8.c.5: The student evaluates current topics in animal rights and animal welfare. The student is expected to:

        - 130.8.c.5.a: compare and contrast animal rights and animal welfare;
    - 130.8.c.6: The student knows the care and management requirements for a variety of small animals. The student is expected to:
        - 130.8.c.6.C: discuss the habitat, housing, and equipment needs for each species studied;
- Advanced Animal Science
    - 130.10.c.13: The student demonstrates an understanding of policies and issues in animal science. The student is expected to:
        - 130.10.c.13.b: analyze the issues surrounding animal welfare and the humane treatment of livestock;
        - 130.10.c.13.d: design, conduct, and complete research to solve a self-identified problem in scientific animal agriculture; and
        - 130.10.c.13.e: analyze the issues surrounding the impact of livestock production on the environment.

HONEY AS A BIOMOLECULE

English Language Arts and Reading

- English I
    - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
        - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
        - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
    - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.36.c.4.F: make inferences and use evidence to support understanding;

        - 110.36.c.4.G: evaluate details read to determine key ideas;
    - 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
        - 110.36.c.11.A: develop questions for formal and informal inquiry
        - 110.36.c.11.F: synthesize information from a variety of sources
- English II
    - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
        - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
        - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
    - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.37.c.4.F: make inferences and use evidence to support understanding;
        - 110.37.c.4.G: evaluate details read to determine key ideas;
        - 110.37.c.4.H: synthesize information from multiple texts to create new understanding;
    - 110.37.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
        - 110.37.c.11.A: develop questions for formal and informal inquiry;
        - 110.37.c.11.F: synthesize information from a variety of sources;

- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.38.c.4.F: make inferences and use evidence to support understanding;
    - 110.38.c.4.G: evaluate details read to understand key ideas;
    - 110.38.c.4.H: synthesize information from a variety of text types to create new understanding;
  - 110.38.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.38.c.11.A: develop questions for formal and informal inquiry;
    - 110.38.c.11.F: synthesize information from a variety of sources;
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
- 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
- 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

▪ 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
- 110.39.c.4.F: make inferences and use evidence to support understanding;
- 110.39.c.4.G: evaluate details read to analyze key ideas;
- 110.39.c.4.H: synthesize information from a variety of text types to create new understanding;

▪ 110.39.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
- 110.39.c.11.A: develop questions for formal and informal inquiry;
- 110.39.c.11.F: synthesize information from a variety of sources;

Social Studies

- United States History Studies Since 1877
  - 113.41.d.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
    - 113.41.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
- World History Studies

        - 113.42.c.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
            - 113.42.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
    - Economics with Emphasis on the Free Enterprise System and Its Benefits
        - 113.31.d.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

Mathematics – No Math TEKS

Science

- Biology:
    - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.42.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
        - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
        - 112.42.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories

- 112.42.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
- 112.42.c.3.C: engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence

- 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
  - 112.42.c.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
- 112.42.c.5: Biological Structures, Functions, and Processes: The student knows that biological structures at multiple levels of organization perform specific functions and processes that affect life. The student is expected to:
  - 112.42.c.5.A: relate the functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids, to the structure and function of a cell
- 112.42.c.11: Biological Structures, Functions, and Processes. Science concepts--biological structures, functions, and processes. The student knows the significance of matter cycling, energy flow, and enzymes in living organisms. The student is expected to:
  - 112.42.c.11.B: investigate and explain the role of enzymes in facilitating cellular processes

Agriculture, Food, and Natural Resources

- Food Technology and Safety
  - 130.15.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.15.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in food processing;
  - 130.15.c.4: The student analyzes the nutritive value of food constituents. The student is expected to:
    - 130.15.c.4.a: define the terms used in food technology;
- Food Processing
  - 130.16.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:

- 130.16.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in the food processing industry, including the value-added products industry;

- 130.16.c.4: The student understands consumer satisfaction issues. The student is expected to:
  - 130.16.c.4.b: explain the factors that affect food palatability;

JOURNEY 2050 LESSON 1: INTRODUCTION TO SUSTAINABLE AGRICULTURE

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;

- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;

Social Studies

- Economics with Emphasis on the Free Enterprise System and its Benefits
  - 113.31.c.1: Economics. The student understands the concepts of scarcity and opportunity costs. The student is expected to:
    - 113.31.c.1.A: explain why scarcity and choice are basic economic problems faced by every society;
  - 113.31.c.10: Economics. The student understands key components of economic growth. The student is expected to:
    - 113.31.c.10.B: analyze how technology relates to growth; and
  - 113.31.c.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
- World Geography Studies
  - 113.43.c.8: Geography. The student understands how people, places, and environments are connected and interdependent. The student is expected to:
    - 113.43.c.8.A: compare ways that humans depend on, adapt to, and modify the physical environment, including the influences of culture and technology;
    - 113.43.c.8.C: evaluate the economic and political relationships between settlements and the environment, including sustainable development and renewable/non-renewable resources.
  - 113.43.c.11: Economics. The student understands how geography influences economic activities. The student is expected to:
    - 113.43.c.11.C: assess how changes in climate, resources, and infrastructure (technology, transportation, and communication) affect the location and patterns of economic activities.
  - 113.43.c.19: Science, technology, and society. The student understands the impact of technology and human modifications on the physical environment. The student is expected to:

- 113.43.c.19.C: analyze the environmental, economic, and social impacts of advances in technology on agriculture and natural resources.

Mathematics – No Math TEKS

Science

- Environmental Systems
  - 112.50.c.6: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
    - 112.50.c.6.A: compare and contrast land use and management methods and how they affect land attributes such as fertility, productivity, economic value, and ecological stability
    - 112.50.c.6.B: relate how water sources, management, and conservation affect water uses and quality;
    - 112.50.c.6.C: document the use and conservation of both renewable and non-renewable resources as they pertain to sustainability;
  - 112.50.c.11: Science concepts. The student understands how individual and collective actions impact environmental systems. The student is expected to:
    - 112.50.c.11.a: evaluate the negative effects of human activities on the environment, including overhunting, overfishing, ecotourism, all-terrain vehicles, and personal watercraft;
    - 112.50.c.11.b: evaluate the positive effects of human activities on the environment, including habitat restoration projects, species preservation efforts, nature conservancy groups, game and wildlife management, and ecotourism
  - 112.50.c.12: Science concepts. The student understands how ethics and economic priorities influence environmental decisions. The student is expected to:
    - 112.50.c.12.a: evaluate cost-benefit trade-offs of commercial activities such as municipal development, food production, deforestation, over-harvesting, mining, and use of renewable and non-renewable energy sources;

Agriculture, Food, and Natural Resources

- Principles of Agriculture
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:

        - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
    - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
        - 130.2.c.4.a: define the scope of agriculture;
        - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
        - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
        - 130.2.c.4.d: identify potential future scenarios for agriculture, food, and natural resources systems, including global impacts;
        - 130.2.c.4.e: describe how emerging technologies and globalization impacts agriculture, food, and natural resources; and
        - 130.2.c.4.f: compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment,
    - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
        - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
        - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
- Professional Standards in Agribusiness
    - 130.3.c.9: The student identifies and researches current agribusiness issues. The student is expected to:
        - 130.3.c.9.b: describe the effects of urbanization on traditional agriculture
- Agribusiness Management and Marketing
    - 130.4.c.3: The student recognizes roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment. The student is expected to:
        - 130.4.c.3.B: demonstrate an understanding of the global context of agricultural industries and careers; and

JOURNEY 2050 LESSON 2: SOIL NUTRIENTS

English Language Arts and Reading

- English I

        - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
            - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - English II
        - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
            - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - English III
        - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
            - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;

    - English IV
        - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
            - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;

Social Studies

- Economics with Emphasis on the Free Enterprise System and its Benefits
    - 113.31.c.1: Economics. The student understands the concepts of scarcity and opportunity costs. The student is expected to:
        - 113.31.c.1.A: explain why scarcity and choice are basic economic problems faced by every society;
        - 113.31.c.1.C: describe the economic factors of production: land, labor, capital, and entrepreneurship; and

        - 113.31.c.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
    - World Geography Studies
        - 113.43.c.8: Geography. The student understands how people, places, and environments are connected and interdependent. The student is expected to:
            - 113.43.c.8.A: compare ways that humans depend on, adapt to, and modify the physical environment, including the influences of culture and technology;

Mathematics – No Math TEKS

Science

- Environmental Systems
    - 112.50.c.6: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
        - 112.50.c.6.A: compare and contrast land use and management methods and how they affect land attributes such as fertility, productivity, economic value, and ecological stability;
        - 112.50.c.6.C: document the use and conservation of both renewable and non-renewable resources as they pertain to sustainability;
    - 112.50.c.11: document the use and conservation of both renewable and non-renewable resources as they pertain to sustainability;
        - 112.50.c.11.a: evaluate the negative effects of human activities on the environment, including overhunting, overfishing, ecotourism, all-terrain vehicles, and personal watercraft;
        - 112.50.c.11.b: evaluate the positive effects of human activities on the environment, including habitat restoration projects, species preservation efforts, nature conservancy groups, game and wildlife management, and ecotourism

Agriculture, Food, and Natural Resources

- Principles of Agriculture

- 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
  - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
- 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
  - 130.2.c.4.a: define the scope of agriculture;
  - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
  - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
  - 130.2.c.4.d: identify potential future scenarios for agriculture, food, and natural resources systems, including global impacts;
  - 130.2.c.4.f: compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment,
- 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
  - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
  - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
- 130.2.c.10: The student develops technical knowledge and skills related to soil systems. The student is expected to:
  - 130.2.c.10.a: identify the components and properties of soils;

- <u>Turf Grass Management</u>
  - 130.22.c.4: The student identifies and implements common cultural and physiological requirements for cool and warm season turf grass establishment. The student is expected to:
    - 130.22.c.4.d: determine the importance of site grading for water movement;

        - 130.22.c.5: The student identifies and implements common cultural and physiological requirements for cool and warm season turf grass maintenance. The student is expected to:
            - 130.22.c.5.g: develop fertilization plans that address turf grass needs and environmental concerns;
    - Advanced Plant and Soil Science
        - 130.25.c.8: The student explains the relationship of biotic and abiotic factors within habitats and ecosystems. The student is expected to:
            - 130.25.c.8.c: evaluate the impact of human activity such as pest control, hydroponics, and sustainable agriculture on ecosystems; and
        - 130.25.c.9: The student analyzes soil science as it relates to food and fiber production. The student is expected to:
            - 130.25.c.9.a: explain soil formation;
            - 130.25.c.9.b: evaluate the properties and nature of soils;
            - 130.25.c.9.c: recognize the importance of conservation of soil and agencies involved in conservation;
        - 130.25.c.10: The student describes the relationship between resources within environmental systems. The student is expected to:
            - 130.25.c.10.a: summarize methods of land use and management;
            - 130.25.c.10.c: explore the use and conservation of renewable and non-renewable resources;
            - 130.25.c.10.d: analyze and evaluate the economic significance and interdependence of components of the environment;
            - 130.25.c.10.e: evaluate the impact of human activity and technology on soil fertility and productivity;
            - 130.25.c.10.f: analyze and describe the effects on environments of events such as fire, hurricanes, deforestation, mining, population growth, and urban development; and

JOURNEY 2050 LESSON 3: WATER

English Language Arts and Reading

- English I
    - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral

language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;

- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;

Social Studies

- Economics with Emphasis on the Free Enterprise System and its Benefits
  - 113.31.c.1: Economics. The student understands the concepts of scarcity and opportunity costs. The student is expected to:
    - 113.31.c.1.A: explain why scarcity and choice are basic economic problems faced by every society;
  - 113.31.c.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and

with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

- World Geography Studies
  - 113.43.c.12: Economics. The student understands the economic importance of, and issues related to, the location and management of resources. The student is expected to:
    - 113.43.c.12.A: analyze how the creation, distribution, and management of key natural resources affects the location and patterns of movement of products, money, and people; and
    - 113.43.c.12.B: evaluate the geographic and economic impact of policies related to the development, use, and scarcity of natural resources such as regulations of water.
  - 113.43.c.19: Science, technology, and society. The student understands the impact of technology and human modifications on the physical environment. The student is expected to:
    - 113.43.c.19.C: analyze the environmental, economic, and social impacts of advances in technology on agriculture and natural resources.

Mathematics – No Math TEKS

Science

- Aquatic Science
  - 112.47.c.10: Science concepts. The student knows the origin and potential uses of fresh water. The student is expected to:
    - 112.47.c.10.A: identify sources of water in a watershed, including rainfall, groundwater, and surface water
- Earth and Space Science
  - 112.49.c.12: Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:
    - 112.49.c.12.C: analyze the natural and anthropogenic factors that affect the severity and frequency of extreme weather events and the hazards associated with these events;
- Environmental Systems

- 112.50.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to explain phenomena or design solutions using appropriate tools and models. The student is expected to:
  - 112.50.c.1.a: ask questions and define problems based on observations or information from text, phenomena, models, or investigations;
- 112.50.c.6: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
  - 112.50.c.5.B: relate how water sources, management, and conservation affect water uses and quality;
  - 112.50.c.5.C: document the use and conservation of both renewable and non-renewable resources as they pertain to sustainability;
  - 112.50.c.5.D: identify how changes in limiting resources such as water, food, and energy affect local ecosystems;

Agriculture, Food, and Natural Resources

- Principles of Agriculture, food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;
    - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
    - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
    - 130.2.c.4.d: identify potential future scenarios for agriculture, food, and natural resources systems, including global impacts;

        - 130.2.c.4.f: compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment,
    - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
        - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
        - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
    - 130.2.c.15: The student explains the relationship between agriculture, food, and natural resources and the environment. The student is expected to:
        - 130.2.c.15.a: determine the effects of agriculture, food, and natural resources upon safety, health, and the environment;
        - 130.2.c.15.b: identify regulations relating to safety, health, and environmental systems in agriculture, food, and natural resources;
        - 130.2.c.15.c: identify and design methods to maintain and improve safety, health, and environmental systems in agriculture, food, and natural resources;
        - 130.2.c.15.d: research and analyze alternative energy sources that stem from or impact agriculture, food, and natural resources; and
        - 130.2.c.15.e: evaluate energy and water conservation methods.
- Energy and Natural Resource Technology
    - 130.11.c.5: The student identifies water use and management in agricultural settings. The student is expected to:
        - 130.11.c.5.b: identify agricultural uses of water such as recycling;
        - 130.11.c.5.c: discuss how agricultural uses may impact water resources;
        - 130.11.c.5.f: evaluate how the different agricultural water uses may impact water availability; and
- Advanced Energy and Natural Resource Technology
    - 130.12.c.8: The student identifies water use and wastewater management. The student is expected to:

- 130.12.c.8.a: identify municipal, industrial, and agricultural uses of water;
- 130.12.c.8.b: explore and develop water recycling opportunities;
- 130.12.c.8.e: analyze how water use impacts water availability;

- Advanced Plant and Soil Science
  - 130.25.c.10: The student describes the relationship between resources within environmental systems. The student is expected to:
    - 130.25.c.10.a: summarize methods of land use and management;
    - 130.25.c.10.b: identify sources, use, quality, and conservation of water;
    - 130.25.c.10.c: explore the use and conservation of renewable and non-renewable resources;

JOURNEY 2050 LESSON 4: ECONOMY

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;

- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;

Social Studies

- Economics with Emphasis on the Free Enterprise System and its Benefits
  - 113.31.c.1: Economics. The student understands the concepts of scarcity and opportunity costs. The student is expected to:
    - 113.31.c.1.A: explain why scarcity and choice are basic economic problems faced by every society;
    - 113.31.c.1.B: describe how societies answer the basic economic questions: what to produce, how to produce, and for whom to produce;
    - 113.31.c.1.C: describe the economic factors of production: land, labor, capital, and entrepreneurship; and
  - 113.31.c.2: Economics. The student understands the interaction of supply, demand, and price. The student is expected to:
    - 113.31.c.2.A: understand the effect of changes in price on the quantity demanded and quantity supplied;
    - 113.31.c.2.B: identify the non-price determinants that create changes in supply and demand, which result in a new equilibrium price; and
  - 113.31.c.17: Personal financial literacy. The student understands the role of individuals in financial markets. The student is expected to:
    - 113.31.c.17.A: assess ways to be a wise investor in the stock market and in other personal investment options such as developing a personal retirement plan;

- 113.31.c.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

Mathematics – No Math TEKS

Science

- Environmental Systems
  - 112.50.c.6: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
    - 112.50.c.6.C: document the use and conservation of both renewable and non-renewable resources as they pertain to sustainability;
    - 112.50.c.6.E: analyze and evaluate the economic significance and interdependence of resources within the local environmental system

Agriculture, Food, and Natural Resources

- Principles of Agriculture, food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.3: The student analyzes concepts related to global diversity. The student is expected to:
    - 130.2.c.3.a: compare and contrast global agricultural markets, currency, and trends; and
    - 130.2.c.3.b: evaluate marketing factors and practices that impact the global markets.
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;

- 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
- 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
- 130.2.c.4.d: identify potential future scenarios for agriculture, food, and natural resources systems, including global impacts;
- 130.2.c.4.f: compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment,

▪ 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
- 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
- 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.

○ Professional Standards in Agribusiness:
▪ 130.4.c.5: The student defines and examines agribusiness management and marketing and its importance to the local and international economy. The student is expected to:
- 130.4.c.5.a: describe the roles and functions of management and leadership in agribusiness;
- 130.4.c.5.b: identify key economic principles of free enterprise; and
- 130.4.c.5.c: analyze the economic opportunities of agribusiness.

JOURNEY 2050 LESSON 5: LAND USE

English Language Arts and Reading

○ English I
▪ 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
- 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;

○ English II

        - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
            - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - English III
        - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
            - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - English IV
        - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
            - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;

Social Studies

- Economics with Emphasis on the Free Enterprise System and its Benefits
    - 113.31.c.1: Economics. The student understands the concepts of scarcity and opportunity costs. The student is expected to:
        - 113.31.c.1.A: explain why scarcity and choice are basic economic problems faced by every society;
        - 113.31.c.1.C: describe the economic factors of production: land, labor, capital, and entrepreneurship; and
    - 113.31.c.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and

disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

- United States History Studies Since 1877
  - 113.41.c.14: Geography. The student understands the relationship between population growth and the physical environment. The student is expected to:
    - 113.41.c.14.A: identify the effects of population growth and distribution on the physical environment; and
- World Geography Studies
  - 113.43.c.8: Geography. The student understands how people, places, and environments are connected and interdependent. The student is expected to:
    - 113.43.c.8.A: compare ways that humans depend on, adapt to, and modify the physical environment, including the influences of culture and technology;

Mathematics – No Math TEKS

Science

- Environmental Systems
  - 112.50.c.6: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
    - 112.50.c.6.A: compare and contrast land use and management methods and how they affect land attributes such as fertility, productivity, economic value, and ecological stability;
    - 112.50.c.6.C: document the use and conservation of both renewable and non-renewable resources as they pertain to sustainability;
  - 112.50.c.11: Science concepts. The student understands how individual and collective actions impact environmental systems. The student is expected to:
    - 112.50.c.11.A: evaluate the negative effects of human activities on the environment, including overhunting, overfishing, ecotourism, all-terrain vehicles, and personal watercraft;
    - 112.50.c.11.B: evaluate the positive effects of human activities on the environment, including habitat restoration projects, species preservation efforts, nature

conservancy groups, game and wildlife management, and ecotourism;

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;
    - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
    - 130.2.c.4.d: identify potential future scenarios for agriculture, food, and natural resources systems, including global impacts;
    - 130.2.c.4.f: compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment,
  - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
    - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
    - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
  - 130.2.c.15: The student explains the relationship between agriculture, food, and natural resources and the environment. The student is expected to:
    - 130.2.c.15.a: determine the effects of agriculture, food, and natural resources upon safety, health, and the environment;

        - 130.2.c.15.b: identify regulations relating to safety, health, and environmental systems in agriculture, food, and natural resources;
        - 130.2.c.15.c: identify and design methods to maintain and improve safety, health, and environmental systems in agriculture, food, and natural resources;
        - 130.2.c.15.d: research and analyze alternative energy sources that stem from or impact agriculture, food, and natural resources; and
        - 130.2.c.15.e: evaluate energy and water conservation methods.
- Advanced Animal Science
    - 130.10.c.13: The student demonstrates an understanding of policies and issues in animal science. The student is expected to:
        - 130.10.c.13.e: analyze the issues surrounding the impact of livestock production on the environment.
- Energy and Natural Resource Technology
    - 130.11.c.4: The student discusses the importance and scope of natural resources. The student is expected to:
        - 130.11.c.4.c: analyze the impacts of natural resources and their effects on the agricultural economy; and
- Advanced Energy and Natural Resource Technology
    - 130.12.c.4: The student discusses the importance and scope of natural resources. The student is expected to:
        - 130.12.c.4.c: analyze the impacts of natural resources and their effects on the agricultural economy; and
- Wildlife, Fisheries, and Ecology Management
    - 130.17.c.3: The student analyzes the importance of wildlife, with an emphasis on use and management. The student is expected to:
        - 130.17.c.3.a: analyze the importance of wildlife, fisheries, and ecology management;
- Range Ecology and Management
    - 130.19.c.4: The student develops an understanding of rangeland as a dynamic, living, and changeable system. The student is expected to:
        - 130.19.c.4.a: explain the relationship of rangeland to the environment;

- 130.19.c.4.b: discuss the interrelationships among water, alternative use, carrying capacity, and population

- Advanced Plant and Soil Science
  - 130.25.c.10: The student describes the relationship between resources within environmental systems. The student is expected to:
    - 130.25.c.10.a: summarize methods of land use and management;

JOURNEY 2050 LESSON 6: CAREERS FOR 2050 AND BEYOND!

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.C: give a presentation using informal, formal, and technical language effectively to meet the needs of audience, purpose, and occasion, employing eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.10: Composition: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to:
    - 110.36.c.10.B: compose informational texts such as explanatory essays, reports, and personal essays using genre characteristics and craft;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral

language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- 110.37.c.1.C: give a formal presentation that incorporates a clear thesis and a logical progression of valid evidence from reliable sources and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
- 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.

- 110.37.c.10: Composition: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to:
  - 110.37.c.10.B: compose informational texts such as explanatory essays, reports, and personal essays using genre characteristics and craft;

- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.C: give a formal presentation that exhibits a logical structure, smooth transitions, accurate evidence, well-chosen details, and rhetorical devices and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward

goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

- 110.38.c.10: Composition: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to:
  - 110.38.c.10.B: compose informational texts such as explanatory essays, reports, resumes, and personal essays using genre characteristics and craft;

- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.39.c.10: Composition: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to:
    - 110.39.c.10.B: compose informational texts such as explanatory essays, reports, resumes, and personal essays using genre characteristics and craft;

Social Studies – No Social Studies TEKS
Mathematics – No Math TEKS
Science

- Environmental Systems
  - 112.37.c.3: Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make

informed decisions within and outside the classroom. The student is expected to:

- 112.37.c.3.E: describe the connection between environmental science and future careers; and

Career Development

- Career Preparation General
  - 127.2.d.8: The student identifies skills and attributes necessary for professional success. The student is expected to:
    - 127.2.d.8.a: evaluate and compare career options, including salaries and benefits;

Agriculture, Food, and Natural Resources

- Principles of Agriculture
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.a: identify career development, education, and entrepreneurship opportunities in the field of agriculture, food, and natural resources;
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;
    - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
  - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
    - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
    - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
- Professional Standards in Agribusiness
  - 130.3.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:

        - 130.3.c.1.f: research career topics using technology such as the Internet.
- Agribusiness Management and Marketing
    - 130.4.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.4.c.1.f: research career topics using technology such as the Internet.
- Mathematical Applications in Agriculture, Food, and Natural Resources
    - 130.5.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.5.c.1.f: research career topics using technology such as the Internet.
- Equine Science
    - 130.6.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.6.c.1.f: research career topics using technology such as the Internet.
- Livestock Production
    - 130.7.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.7.c.1.f: research career topics using technology such as the Internet.
- Small Animal Management
    - 130.8.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.8.c.1.f: research career topics using technology such as the Internet.
- Veterinary Medical Applications
    - 130.9.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.9.c.1.f: research career topics using technology such as the Internet.
- Advanced Animal Science

        - 130.10.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
            - 130.10.c.1.f: research career topics using technology such as the Internet.
    - Food Technology and Safety
        - 130.15.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
            - 130.15.c.1.f: research career topics using technology such as the Internet.
    - Food Processing
        - 130.16.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
            - 130.16.c.1.f: research career topics using technology such as the Internet.

JOURNEY 2050 LESSON 7: TECHNOLOGY AND INNOVATIONS

English Language Arts and Reading

- English I
    - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
        - 110.36.c.1.C: give a presentation using informal, formal, and technical language effectively to meet the needs of audience, purpose, and occasion, employing eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
        - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.

        - 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
            - 110.36.c.11.E: locate relevant sources
            - 110.36.c.11.F: synthesize information from a variety of sources
            - 110.36.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results
    - English II
        - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
            - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
            - 110.37.c.1.C: give a formal presentation that incorporates a clear thesis and a logical progression of valid evidence from reliable sources and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
            - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
        - 110.37.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
            - 110.37.c.11.E: locate relevant sources;
            - 110.37.c.11.F: synthesize information from a variety of sources;
            - 110.37.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
    - English III
        - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral

language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
- 110.38.c.1.C: give a formal presentation that exhibits a logical structure, smooth transitions, accurate evidence, well-chosen details, and rhetorical devices and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
- 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

- 110.38.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.38.c.11.E: locate relevant sources;
  - 110.38.c.11.F: synthesize information from a variety of sources;
  - 110.38.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

- <u>English IV</u>
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating

a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

- 110.39.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.39.c.11.E: locate relevant sources;
  - 110.39.c.11.F: synthesize information from a variety of sources;
  - 110.39.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

Social Studies

- Economics with Emphasis on the Free Enterprise System and its Benefits
  - 113.31.c.2: Economics. The student understands the interaction of supply, demand, and price. The student is expected to:
    - 113.31.c.2.A: understand the effect of changes in price on the quantity demanded and quantity supplied;
    - 113.31.c.2.B: identify the non-price determinants that create changes in supply and demand, which result in a new equilibrium price; and
  - 113.31.c.10: Economics. The student understands key components of economic growth. The student is expected to:
    - 113.31.c.10.B: analyze how technology relates to growth; and
- United States History Since 1877
  - 113.41.c.26: Science, technology, and society. The student understands the impact of science, technology, and the free enterprise system on the economic development of the United States. The student is expected to:
    - 113.41.c.26.B: explain how specific needs result in scientific discoveries and technological innovations in agriculture, the military, and medicine; and
- World Geography Studies
  - 113.43.c.11: Economics. The student understands how geography influences economic activities. The student is expected to:
    - 113.43.c.11.C: assess how changes in climate, resources, and infrastructure (technology, transportation, and communication) affect the location and patterns of economic activities.

- 113.43.c.19: Science, technology, and society. The student understands the impact of technology and human modifications on the physical environment. The student is expected to:
  - 113.43.c.19.C: analyze the environmental, economic, and social impacts of advances in technology on agriculture and natural resources.

Mathematics – No Math TEKS

Science

- Environmental Systems
  - 112.50.c.12: Science concepts. The student knows the impact of human activities on the environment. The student is expected to:
    - 112.50.c.12.D: discuss the impact of research and technology on social ethics and legal practices in situations such as the design of new buildings, recycling, or emission standards;

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;
    - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
    - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
    - 130.2.c.4.d: identify potential future scenarios for agriculture, food, and natural resources systems, including global impacts;
    - 130.2.c.4.e: describe how emerging technologies and globalization impacts agriculture, food, and natural resources; and

        - 130.2.c.4.f: compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment,
    - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
        - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
        - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
    - 130.2.c.7: The student applies appropriate research methods to agriculture, food, and natural resources topics. The student is expected to:
        - 130.2.c.7.a: discuss major research and developments in the fields of agriculture, food, and natural resources;
        - 130.2.c.7.b: use a variety of resources for research and development; and

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English Language Arts and Reading

- English I
    - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
        - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.36.c.4.G: evaluate details read to determine key ideas;
    - 110.36.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts

that are legible and use appropriate conventions. The student is expected to:

- 110.36.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
  - 110.36.c.9.B.i: using an organizing structure appropriate to purpose, audience, topic, and context;

- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
  - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.37.c.4.G: evaluate details read to determine key ideas;
  - 110.37.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
    - 110.37.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
      - 110.37.c.9.B.i: using an organizing structure appropriate to purpose, audience, topic, and context;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

        - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.38.c.4.G: evaluate details read to understand key ideas;
    - 110.38.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
        - 110.38.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
            - 110.38.c.9.B.i: using strategic organizational structures appropriate to purpose, audience, topic, and context;
- <u>English IV</u>
    - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.39.c.4.G: evaluate details read to analyze key ideas;
    - 110.39.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
        - 110.39.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:

- 110.39.c.9.B.i: using strategic organizational structures appropriate to purpose, audience, topic, and context;

Social Studies

- United States History Studies Since 1877
  - 113.41.d.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
    - 113.41.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
- World History Studies
  - 113.42.c.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
    - 113.42.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

Mathematics – No Math TEKS

Science

- Biology:
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:

- 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
- 112.42.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
- 112.42.c.1.D: use appropriate tools such as microscopes, slides, Petri dishes, laboratory glassware, metric rulers, digital balances, pipets, filter paper, micropipettes, gel electrophoresis and polymerase chain reaction (PCR) apparatuses, microcentrifuges, water baths, incubators, thermometers, hot plates, data collection probes, test tube holders, lab notebooks or journals, hand lenses, and models, diagrams, or samples of biological specimens or structures
- 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
- 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
- 112.42.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems

- 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
  - 112.42.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
- 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
  - 112.42.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
  - 112.42.c.4.B: relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and

contributions of diverse scientists as related to the content

- 112.42.c.13: Interdependence Within Environmental Systems. The student knows that organisms have an organizational structure and variations can influence survival of populations. The student is expected to:
  - 112.42.c.13.B: analyze how ecosystem stability is affected by disruptions to the cycling of matter and flow of energy through trophic levels using models
  - 112.42.c.13.C: explain the significance of the carbon and nitrogen cycles to ecosystem stability and analyze the consequences of disrupting these cycles
  - 112.42.c.13.D: explain how environmental change, including change due to human activity, affects biodiversity and analyze how changes in biodiversity impact ecosystem stability

- Aquatic Science:
  - 112.47.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.47.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.47.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
    - 112.47.c.1.D: use appropriate tools such as Global Positioning System (GPS), Geographic Information System (GIS), weather balloons, buoys, water testing kits, meter sticks, metric rulers, pipettes, graduated cylinders, standard laboratory glassware, balances, timing devices, pH meters or probes, various data collecting probes, thermometers, calculators, computers, internet access, turbidity testing devices, hand magnifiers, work and disposable gloves, compasses, first aid kits, field guides, water quality test kits or probes, 30-meter tape measures, tarps, ripple tanks, trowels, screens, buckets, sediment samples equipment, cameras, flow meters, cast nets, kick nets, seines, computer models,

spectrophotometers, stereomicroscopes, compound microscopes, clinometers, and field journals, various prepared slides, hand lenses, hot plates, Petri dishes, sampling nets, waders, leveling grade rods (Jason sticks), protractors, inclination and height distance calculators, samples of biological specimens or structures, core sampling equipment, fish tanks and associated supplies, and hydrometers; 112.47.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.47.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.47.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
- 112.47.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.47.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
- 112.47.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.47.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
    - 112.47.c.4.B: relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content
- 112.47.c.9: Science concepts. The student knows the role of cycles in an aquatic environment. The student is expected to:
    - 112.47.c.9.C: explain how tidal cycles influence intertidal ecology
- 112.47.c.10: Science concepts. The student knows the origin and potential uses of fresh water. The student is expected to:

        - 112.47.c.10.A: identify sources of water in a watershed, including rainfall, groundwater, and surface water
        - 112.47.c.10.B: identify factors that contribute to how water flows through a watershed
        - 112.47.c.10.C: analyze water quantity and quality in a local watershed or aquifer
        - 112.47.c.10.D: describe human uses of fresh water and how human freshwater use competes with that of other organisms
    - 112.47.c.11: Science concepts. The student knows that geological phenomena and fluid dynamics affect aquatic systems. The student is expected to:
        - 112.47.c.11.D: describe how erosion and deposition in river systems lead to formation of geologic features
- Environmental System:
    - 112.50.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.50.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.50.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
        - 112.50.c.1.D: use appropriate tools such as meter sticks, metric rulers, pipettes, graduated cylinders, standard laboratory glassware, balances, timing devices, pH meters or probes, various data collecting probes, thermometers, calculators, computers, internet access, turbidity testing devices, hand magnifiers, work and disposable gloves, compasses, first aid kits, binoculars, field guides, water quality test kits or probes, soil test kits or probes, 30 meter tape measures, tarps, shovels, trowels, screens, buckets, rock and mineral samples equipment, air quality testing devices, cameras, flow meters, Global Positioning System (GPS) units, Geographic Information System (GIS) software, computer models, densiometers, spectrophotometers, stereomicroscopes, compound microscopes, clinometers,

field journals, various prepared slides, hand lenses, hot plates, Petri dishes, sampling nets, waders, leveling grade rods (Jason sticks), protractors, inclination and height distance calculators, samples of biological specimens or structures, core sampling equipment, and kick nets
    - 112.47.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.50.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.50.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
- 112.50.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.50.c.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
- 112.50.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.50.c.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
    - 112.50.c.B: relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content
- 112.50.c.5: Science concepts. The student knows the relationships of biotic and abiotic factors within habitats, ecosystems, and biomes. The student is expected to:
    - 112.50.c.5.A: identify native plants and animals within a local ecosystem and compare their roles to those of plants and animals in other biomes, including aquatic, grassland, forest, desert, and tundra

        - 112.50.c.5.B: explain the cycling of water, phosphorus, carbon, silicon, and nitrogen through ecosystems, including sinks, and the human interactions that alter these cycles using tools such as models
    - 112.50.c.6: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
        - 112.50.c.6.A: compare and contrast land use and management methods and how they affect land attributes such as fertility, productivity, economic value, and ecological stability
        - 112.50.c.6.B: relate how water sources, management, and conservation affect water uses and quality
        - 112.50.c.6.C: document the use and conservation of both renewable and non-renewable resources as they pertain to sustainability
        - 112.50.c.6.D: identify how changes in limiting resources such as water, food, and energy affect local ecosystems
        - 112.50.c.6.E: analyze and evaluate the economic significance and interdependence of resources within the local environmental system
        - 112.50.c.6.F: evaluate the impact of waste management methods such as reduction, reuse, recycling, upcycling, and composting on resource availability in the local environment
    - 112.50.c.7: Science concepts. The student knows the sources and flow of energy through an environmental system. The student is expected to:
        - 112.50.c.7.A: describe the interactions between the components of the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere
    - 112.50.c.8: Science concepts. The student knows the relationship between carrying capacity and changes in populations and ecosystems. The student is expected to:
        - 112.50.c.8.D: analyze and make predictions about the impact on populations of geographic locales due to diseases, birth and death rates, urbanization, and natural events such as migration and seasonal changes
- <u>Earth Systems Science:</u>
    - 112.49.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory,

and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:

- 112.49.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
- 112.49.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
- 112.49.c.1.D: use appropriate tools such as a drawing compass, magnetic compass, bar magnets, topographical and geological maps, satellite imagery and other remote sensing data, Geographic Information Systems (GIS), Global Positioning System (GPS), hand lenses, and fossil and rock sample kits;
- 112.49.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
- 112.49.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
- 112.49.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems

- 112.49.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
  - 112.49.c.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
- 112.49.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
  - 112.49.c.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
  - 112.49.c.B: relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and

contributions of diverse scientists as related to the content

- 112.49.c.10: Science concepts. The student knows how the physical and chemical properties of the ocean affect its structure and flow of energy. The student is expected to:
  - 112.49.c.10.A: describe how the composition and structure of the oceans leads to thermohaline circulation and its periodicity
  - 112.49.c.10.B: model and explain how changes to the composition, structure, and circulation of deep oceans affect thermohaline circulation using data on energy flow, ocean basin structure, and changes in polar ice caps and glaciers
- 112.49.c.11: Science concepts. The student knows that dynamic and complex interactions among Earth's systems produce climate and weather. The student is expected to:
  - 112.49.c.11.C: model how greenhouse gases trap thermal energy near Earth's surface
- 112.49.c.13: Science concepts. The student explores global policies and careers related to the life cycles of Earth's resources. The student is expected to:
  - 112.49.c.13.A: analyze the policies related to resources from discovery to disposal, including economics, health, technological advances, resource type, concentration and location, waste disposal and recycling, mitigation efforts, and environmental impacts

Agriculture Food, and Natural Resources

- Advanced Plant and Soil Science
  - 130.25.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.25.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in plant systems;
  - 130.25.c.2: The student, for at least 40% of instructional time, conducts laboratory and field investigations using safe, environmentally appropriate, and ethical practices. The student is expected to:
    - 130.25.c.2.b: demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.

- 130.25.c.3: The student uses scientific methods and equipment during laboratory and field investigations. The student is expected to:
  - 130.25.c.3.b: know that hypotheses are tentative and testable statements that must be capable of being supported or not supported by observational evidence. Hypotheses of durable explanatory power that have been tested over a wide variety of conditions are incorporated into theories;
  - 130.25.c.3.c: know scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well-established and highly-reliable explanations, but they may be subject to change as new areas of science and new technologies are developed;
  - 130.25.c.3.d: distinguish between scientific hypotheses and scientific theories;
  - 130.25.c.3.e: plan and implement descriptive, comparative, and experimental investigations, including asking questions, formulating testable hypotheses, and selecting equipment and technology;
  - 130.25.c.3.f: collect and organize qualitative and quantitative data and make measurements with accuracy and precision using tools such as calculators, spreadsheet software, data-collecting probes, computers, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, electronic balances, analysis kits, sieve sets, sieve shakers, soil augers, soil moisture meters, hand lenses, Celsius thermometers, lab notebooks or journals, timing devices, cameras, Petri dishes, lab incubators, dissection equipment, meter sticks, and models, diagrams, or samples of biological specimens or structures;
  - 130.25.c.3.g: analyze, evaluate, make inferences, and predict trends from data; and
  - 130.25.c.3.h: communicate valid conclusions supported by the data through methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.

- 130.25.c.4: The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to:
  - 130.25.c.4.a: in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student;
- 130.25.c.6: The student analyzes plant and soil science as it relates to plant and soil relationships affecting the production of food, fiber, and other economic crops. The student is expected to:
  - 130.25.c.6.a: explain the importance and interrelationship of soil and plants; and
  - 130.25.c.6.b: practice soil and plant evaluation as it applies to agricultural and urban settings.
- 130.25.c.7: The student develops scenarios for advances in plant and soil science. The student is expected to:
  - 130.25.c.7.a: design, conduct, and complete research in a laboratory or field investigation to solve problems in plant and soil science;
  - 130.25.c.7.b: use charts, tables, and graphs to prepare written summaries of results and data obtained in a laboratory or field investigation;
  - 130.25.c.7.c: organize, analyze, evaluate, make inferences, and predict trends from data obtained in a laboratory or field investigation; and
  - 130.25.c.7.d: communicate valid outcomes and solutions.
- 130.25.c.9: The student analyzes soil science as it relates to food and fiber
  - 130.25.c.9.c: recognize the importance of conservation of soil and agencies involved in conservation;
  - 130.25.c.9.e: perform soil management practices such as tillage trials and sustainable soil management practices; and
  - 130.25.c.9.f: practice soil evaluations related to experiential activities such as land judging.

LACTOSE LAB: SOME DON'T LIKE IT SWEET

English Language Arts and Reading

- English I

- 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
  - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
  - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
  - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.36.c.4.G: evaluate details read to determine key ideas;
- 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.36.c.11.A: develop questions for formal and informal inquiry

- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.

- 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.37.c.4.G: evaluate details read to determine key ideas;
- 110.37.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.37.c.11.A: develop questions for formal and informal inquiry;

- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.38.c.4.G: evaluate details read to understand key ideas;
  - 110.38.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:

- 110.38.c.11.A: develop questions for formal and informal inquiry;

- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.39.c.4.G: evaluate details read to analyze key ideas;
  - 110.39.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.39.c.11.A: develop questions for formal and informal inquiry;

Social Studies

- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

Mathematics – No Math TEKS

Science

- Biology:
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.42.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
    - 112.42.c.1.D: use appropriate tools such as microscopes, slides, Petri dishes, laboratory glassware, metric rulers, digital balances, pipets, filter paper, micropipettes, gel electrophoresis and polymerase chain reaction (PCR) apparatuses, microcentrifuges, water baths, incubators, thermometers, hot plates, data collection probes, test tube holders, lab notebooks or journals, hand lenses, and models, diagrams, or samples of biological specimens or structures

    - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.42.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
- 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.42.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
- 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.42.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
    - 112.42.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- 112.42.c.12: Science concepts--biological structures, functions, and processes. The student knows that multicellular organisms are composed of multiple systems that interact to perform complex functions. The student is expected to:
    - 112.42.c.12.A: analyze the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals
    - 112.42.c.12.B: explain how the interactions that occur among systems that perform functions of transport, reproduction, and response in plants are facilitated by their structures

Agriculture, Food, and Natural Resources

- Food Technology and Safety
  - 130.15.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.15.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in food processing;
  - 130.15.c.3: The student explains the impact of food science systems. The student is expected to:
    - 130.15.c.3.b: define trends in food production, world population, and supply and demand for food products;
  - 130.15.c.4: The student analyzes the nutritive value of food constituents. The student is expected to:
    - 130.15.c.4.a: define the terms used in food technology;
    - 130.15.c.4.b: compare and contrast the nutritive value of food groups; and
  - 130.15.c.11: The student describes the processing, packaging, quality analysis, and marketing of milk and dairy products for distribution. The student is expected to:
    - 130.15.c.11.a: describe methods of preparing milk for processing;
    - 130.15.c.11.b: evaluate methods of processing milk and dairy products;
    - 130.15.c.11.c: identify dairy products, including cultured milk products and frozen dairy desserts; and
- Food Processing
  - 130.16.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.16.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in the food processing industry, including the value-added products industry;
  - 130.16.c.3: The student knows the relationship of the food processing industry to the free enterprise system. The student is expected to:
    - 130.16.c.3.b: explain trends in the consumption of food products.

MELONS, MITOSIS, AND MEIOSIS

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

Social Studies

- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

Mathematics – No Math TEKS

Science

- Biology:
  - 112.42.c.1: Science concepts--biological structures, functions, and processes. The student knows that multicellular organisms are composed of multiple systems that interact to perform complex functions. The student is expected to:
    - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:

        - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
        - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.42.c.6: Biological Structures, Functions, and Processes: The student knows how an organism grows and the importance of cell differentiation. The student is expected to:
        - 112.42.c.6.A: explain the importance of the cell cycle to the growth of organisms, including an overview of the stages of the cell cycle and deoxyribonucleic acid (DNA) replication models
        - 112.42.c.6.B: explain the process of cell specialization through cell differentiation, including the role of environmental factors
    - 112.42.c.7: Mechanisms of Genetics: The student knows the role of nucleic acids in gene expression. The student is expected to:
        - 112.42.c.7.A: identify components of DNA, explain how the nucleotide sequence specifies some traits of an organism, and examine scientific explanations for the origin of DNA
        - 112.42.c.7.B: describe the significance of gene expression and explain the process of protein synthesis using models of DNA and ribonucleic acid (RNA)
        - 112.42.c.7.C: identify and illustrate changes in DNA and evaluate the significance of these changes
        - 112.42.c.7.D: discuss the importance of molecular technologies such as polymerase chain reaction (PCR), gel electrophoresis, and genetic engineering that are applicable in current research and engineering practices

Agriculture Food, and Natural Resources

- Advanced Plant and Soil Science
    - 130.25.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:

        - 130.25.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in plant systems;
    - 130.25.c.17: The student diagrams the structure and function of nucleic acids in the mechanism of genetics. The student is expected to:
        - 130.25.c.17.a: describe components of deoxyribonucleic acid (DNA) and illustrate how information for specifying the traits of an organism is carried in DNA;
        - 130.25.c.17.b: identify and illustrate how changes in DNA cause phenotypic or genotypic changes;
        - 130.25.c.17.c: compare and contrast genetic variations observed in plants and animals; and
        - 130.25.c.17.d: compare the processes of mitosis and meiosis and their significance.
    - 130.25.c.18: The student demonstrates skills related to the human, scientific, and technological dimensions of crop production and the resources necessary for producing domesticated plants. The student is expected to:
        - 130.25.c.18.a: describe the growth and development of major crops;
        - 130.25.c.18.b: apply principles of genetics and plant breeding;
        - 130.25.c.18.c: examine the development of crop varieties through the origin of agriculture; and

METHODS OF CROP MODIFICATION

English Language Arts and Reading

- English I
    - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
        - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
        - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information,

developing a plan for consensus building, and setting ground rules for decision making.

- 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.36.c.4.G: evaluate details read to determine key ideas;
- 110.36.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
  - 110.36.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
    - 110.36.c.9.B.i: using an organizing structure appropriate to purpose, audience, topic, and context;
- 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.36.c.11.A: develop questions for formal and informal inquiry

- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.

- 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.37.c.4.G: evaluate details read to determine key ideas;
- 110.37.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
  - 110.37.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
    - 110.37.c.9.B.i: using an organizing structure appropriate to purpose, audience, topic, and context;
- 110.37.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.37.c.11.A: develop questions for formal and informal inquiry;

- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

- 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.38.c.4.G: evaluate details read to understand key ideas;
- 110.38.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
  - 110.38.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
    - 110.38.c.9.B.i: using strategic organizational structures appropriate to purpose, audience, topic, and context;
- 110.38.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.38.c.11.A: develop questions for formal and informal inquiry;
  - 110.38.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making,

and evaluating the work of the group based on agreed-upon criteria.

- 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.39.c.4.G: evaluate details read to analyze key ideas;
- 110.39.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
  - 110.39.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
    - 110.39.c.9.B.i: using strategic organizational structures appropriate to purpose, audience, topic, and context;
- 110.39.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.39.c.11.A: develop questions for formal and informal inquiry;

Social Studies

- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:

- 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

Mathematics – No Math TEKS

Science

- Biology:
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
  - 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.42.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
    - 112.42.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
    - 112.42.c.3.C: engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence

- 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
  - 112.42.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- 112.42.c.7: Mechanisms of Genetics: The student knows the role of nucleic acids in gene expression. The student is expected to:
  - 112.42.c.7.A: identify components of DNA, explain how the nucleotide sequence specifies some traits of an organism, and examine scientific explanations for the origin of DNA
  - 112.42.c.7.B: describe the significance of gene expression and explain the process of protein synthesis using models of DNA and ribonucleic acid (RNA)
  - 112.42.c.7.C: identify and illustrate changes in DNA and evaluate the significance of these changes
  - 112.42.c.7.D: discuss the importance of molecular technologies such as polymerase chain reaction (PCR), gel electrophoresis, and genetic engineering that are applicable in current research and engineering practices
- 112.42.c.8: Mechanisms of Genetics: The student knows the role of nucleic acids and the principles of inheritance and variation of traits in Mendelian and non-Mendelian genetics. The student is expected to:
  - 112.42.c.8.A: analyze the significance of chromosome reduction, independent assortment, and crossing over during meiosis in increasing diversity in populations of organisms that reproduce sexually
- 112.42.c.10: Biological Evolution. The student knows evolutionary theory is a scientific explanation for the unity and diversity of life that has multiple mechanisms. The student is expected to:
  - 112.42.c.10.A: analyze and evaluate how natural selection produces change in populations and not in individuals

- 112.42.c.10.B: analyze and evaluate how the elements of natural selection, including inherited variation, the potential of a population to produce more offspring than can survive, and a finite supply of environmental resources, result in differential reproductive success
- 112.42.c.10.C: analyze and evaluate how natural selection may lead to speciation
- 112.42.c.10.D: analyze evolutionary mechanisms other than natural selection, including genetic drift, gene flow, mutation, and genetic recombination, and their effect on the gene pool of a population

▪ 112.42.c.11: Biological Structures, Functions, and Processes. Science concepts--biological structures, functions, and processes. The student knows the significance of matter cycling, energy flow, and enzymes in living organisms. The student is expected to:
- 112.42.c.11.A: explain how matter is conserved and energy is transferred during photosynthesis and cellular respiration using models, including the chemical equations for these processes

▪ 112.42.c.13: Interdependence Within Environmental Systems. The student knows that organisms have an organizational structure and variations can influence survival of populations. The student is expected to:
- 112.42.c.13.D: explain how environmental change, including change due to human activity, affects biodiversity and analyze how changes in biodiversity impact ecosystem stability

Agriculture, Food, and Natural Resources

○ Advanced Plant Science

▪ 130.25.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
- 130.25.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in plant systems;

▪ 130.25.c.17: The student diagrams the structure and function of nucleic acids in the mechanism of genetics. The student is expected to:

- 130.25.c.17.a: describe components of deoxyribonucleic acid (DNA) and illustrate how information for specifying the traits of an organism is carried in DNA;
- 130.25.c.17.b: identify and illustrate how changes in DNA cause phenotypic or genotypic changes;
- 130.25.c.17.c: compare and contrast genetic variations observed in plants and animals; and
- 130.25.c.17.d: compare the processes of mitosis and meiosis and their significance.

- 130.25.c.18: The student demonstrates skills related to the human, scientific, and technological dimensions of crop production and the resources necessary for producing domesticated plants. The student is expected to:
  - 130.25.c.18.a: describe the growth and development of major crops;
  - 130.25.c.18.b: apply principles of genetics and plant breeding;
  - 130.25.c.18.c: examine the development of crop varieties through the origin of agriculture; and

MY AGRICULTURAL CONNECTIONS

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
  - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.36.c.4.G: evaluate details read to determine key ideas;
  - 110.36.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student

uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:

- 110.36.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
  - 110.36.c.9.B.i: using an organizing structure appropriate to purpose, audience, topic, and context;

- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
  - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.37.c.4.G: evaluate details read to determine key ideas;
  - 110.37.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
    - 110.37.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
      - 110.37.c.9.B.i: using an organizing structure appropriate to purpose, audience, topic, and context;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral

language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
- 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.38.c.4.G: evaluate details read to understand key ideas;
- 110.38.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
    - 110.38.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
        - 110.38.c.9.B.i: using strategic organizational structures appropriate to purpose, audience, topic, and context;

- English IV
    - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.39.c.4.G: evaluate details read to analyze key ideas;
    - 110.39.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:

- 110.39.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
  - 110.39.c.9.B.i: using strategic organizational structures appropriate to purpose, audience, topic, and context;

Social Studies

- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- World Geography Studies
  - 113.43.d.12: Economics. The student understands the economic importance of, and issues related to, the location and management of resources. The student is expected to:
    - 113.43.d.12.A: analyze how the creation, distribution, and management of key natural resources affects the location and patterns of movement of products, money, and people;
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

Mathematics – No Math TEKS

Science

- Earth Systems Science:
  - 112.49.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.49.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.49.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.49.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
  - 112.49.c.12: Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:
    - 112.49.c.12.A: evaluate the impact on humans of natural changes in Earth's systems such as earthquakes, tsunamis, and volcanic eruptions
    - 112.49.c.12.C: analyze the natural and anthropogenic factors that affect the severity and frequency of extreme weather events and the hazards associated with these events

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
    - 130.2.c.1.e: identify careers in agriculture, food, and natural resources with required aptitudes in science, technology, engineering, mathematics, language arts, and social studies.

- 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
  - 130.2.c.4.a: define the scope of agriculture;
  - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
- 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
  - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
  - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
- 130.2.c.11: The student develops technical knowledge and skills related to plant systems. The student is expected to:
  - 130.2.c.11.d: identify plants of importance to agriculture, food, and natural resources; and
- 130.2.c.13: The student describes the principles of food products and processing
  - 130.2.c.13.a: evaluate food products and processing systems;
- 130.2.c.15: The student explains the relationship between agriculture, food, and natural resources and the environment. The student is expected to:
  - 130.2.c.15.d: research and analyze alternative energy sources that stem from or impact agriculture, food, and natural resources; and

MYSTERY JUICE

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;

        - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
    - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.36.c.4.G: evaluate details read to determine key ideas;
        - 110.36.c.4.H: synthesize information from two texts to create new understanding;
    - 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
        - 110.36.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order
    - 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
        - 110.36.c.11.A: develop questions for formal and informal inquiry
        - 110.36.c.11.E: locate relevant sources
        - 110.36.c.11.F: synthesize information from a variety of sources
        - 110.36.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results
- English II
    - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
        - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;

        - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
    - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.37.c.4.G: evaluate details read to determine key ideas;
        - 110.37.c.4.H: synthesize information from multiple texts to create new understanding;
    - 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
        - 110.37.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
    - 110.37.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
        - 110.37.c.11.A: develop questions for formal and informal inquiry;
        - 110.37.c.11.E: locate relevant sources;
        - 110.37.c.11.F: synthesize information from a variety of sources;
        - 110.37.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- English III
    - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
        - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;

        - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
    - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.38.c.4.G: evaluate details read to understand key ideas;
        - 110.38.c.4.H: synthesize information from a variety of text types to create new understanding
    - 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
        - 110.38.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order
    - 110.38.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
        - 110.38.c.11.A: develop questions for formal and informal inquiry;
        - 110.38.c.11.E: locate relevant sources;
        - 110.38.c.11.F: synthesize information from a variety of sources;
        - 110.38.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- <u>English IV</u>
    - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;

        - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
        - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
    - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.39.c.4.G: evaluate details read to analyze key ideas;
        - 110.39.c.4.H: synthesize information from a variety of text types to create new understanding;
    - 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
        - 110.39.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
    - 110.39.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
        - 110.39.c.11.A: develop questions for formal and informal inquiry;
        - 110.39.c.11.E: locate relevant sources;
        - 110.39.c.11.F: synthesize information from a variety of sources;
        - 110.39.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

Social Studies

- World History Studies
    - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:

- 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

Mathematics – No Math TEKS

Science

- Biology:
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.42.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
    - 112.42.c.1.D: use appropriate tools such as microscopes, slides, Petri dishes, laboratory glassware, metric rulers, digital balances, pipets, filter paper, micropipettes, gel electrophoresis and polymerase chain reaction (PCR) apparatuses, microcentrifuges, water baths, incubators, thermometers, hot plates, data collection probes, test tube holders, lab notebooks or journals, hand lenses, and

models, diagrams, or samples of biological specimens or structures
- 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
- 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
- 112.42.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
- 112.42.c.1.H: distinguish among scientific hypotheses, theories, and laws

- 112.42.c.11: Biological Structures, Functions, and Processes. Science concepts--biological structures, functions, and processes. The student knows the significance of matter cycling, energy flow, and enzymes in living organisms. The student is expected to:
  - 112.42.c.11.B: investigate and explain the role of enzymes in facilitating cellular processes
- 112.42.c.12: Science concepts--biological structures, functions, and processes. The student knows that multicellular organisms are composed of multiple systems that interact to perform complex functions. The student is expected to:
  - 112.42.c.12.A: analyze the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals

- <u>Earth Systems Science:</u>
  - 112.49.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.49.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations

- 112.49.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
- 112.49.c.1.D: use appropriate tools such as a drawing compass, magnetic compass, bar magnets, topographical and geological maps, satellite imagery and other remote sensing data, Geographic Information Systems (GIS), Global Positioning System (GPS), hand lenses, and fossil and rock sample kits;
- 112.49.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
- 112.49.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
- 112.49.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
- 112.49.c.1.H: distinguish among scientific hypotheses, theories, and laws

▪ 112.49.c.9: Science concepts. The student knows that the lithosphere continuously changes as a result of dynamic and complex interactions among Earth's systems. The student is expected to:

- 112.49.c.9.A: interpret Earth surface features using a variety of methods such as satellite imagery, aerial photography, and topographic and geologic maps using appropriate technologies
- 112.49.c.9.B: investigate and model how surface water and ground water change the lithosphere through chemical and physical weathering and how they serve as valuable natural resources
- 112.49.c.9.C: model the processes of mass wasting, erosion, and deposition by water, wind, ice, glaciation, gravity, and volcanism in constantly reshaping Earth's surface
- 112.49.c.9.D: evaluate how weather and human activity affect the location, quality, and supply of available freshwater resources

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources

- 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
  - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
- 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
  - 130.2.c.4.a: define the scope of agriculture;
  - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
- 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
  - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
  - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations
- 130.2.c.7: The student applies appropriate research methods to agriculture, food, and natural resources topics. The student is expected to:
  - 130.2.c.7.a: discuss major research and developments in the fields of agriculture, food, and natural resources;
  - 130.2.c.7.b: use a variety of resources for research and development; and
  - 130.2.c.7.c: describe scientific methods of research.
- 130.2.c.13: The student describes the principles of food products and processing
  - 130.2.c.13.a: evaluate food products and processing systems;
  - 130.2.c.13.b: determine trends in world food production;
  - 130.2.c.13.c: discuss current issues in food production; and
  - 130.2.c.13.d: use tools, equipment, and personal protective equipment common to food products and processing systems.

- Livestock Production

        - 130.7.c.1: The student demonstrates professional standards/employability skills as required by business and industry The student is expected to:
            - 130.7.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in animal systems;
        - 130.7.c.3: The student demonstrates technical skills relating to the interrelated human, scientific, and technological dimensions of animal systems. The student is expected to:
            - 130.7.c.3.a: assess the importance of the United States' impact on world commodity markets;
    - Energy and Natural Resource Technology
        - 130.11.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
            - 130.11.c.1.a: apply competencies related to resources, information, interpersonal skills, and systems of operation in energy and natural resources;
        - 130.11.c.4: The student discusses the importance and scope of natural resources. The student is expected to:
            - 130.11.c.4.a: identify various types of natural resources;
            - 130.11.c.4.b: discuss renewable and non-renewable energy resources and their impact on the environment;
            - 130.11.c.4.c: analyze the impacts of natural resources and their effects on the agricultural economy; and
    - Advanced Energy and Natural Resource Technology
        - 130.12.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
            - 130.12.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in energy and natural resources;
        - 130.12.c.4: The student determines and evaluates the importance and scope of energy and natural resources. The student is expected to:
            - 130.12.c.4.a: identify various types of natural resources;
            - 130.12.c.4.b: identify renewable, non-renewable, and sustainable energy resources and determine their availability;
            - 130.12.c.4.c: evaluate the impacts of energy production on natural resources and the agricultural economy; and

- Food Technology and Safety
  - 130.15.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.15.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in food processing;
  - 130.15.c.3: The student explains the impact of food science systems. The student is expected to:
    - 130.15.c.3.a: explain the significance of food science systems;
- Food Processing
  - 130.16.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.16.c.1:b: apply competencies related to resources, information, interpersonal skills, and systems of operation in the food processing industry, including the value-added products industry;
  - 130.16.c.3: The student knows the relationship of the food processing industry to the free enterprise system. The student is expected to:
    - 130.16.c.3.a: explain the importance of the food processing industry in the free enterprise system; and
    - 130.16.c.3.b: explain trends in the consumption of food products.
- Horticulture Science
  - 130.23.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.23.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in horticulture;
  - 130.23.c.3: The student develops technical skills associated with the management and production of horticultural plants. The student is expected to:
    - 130.23.c.3.f: describe the processes of fruit, nut, and vegetable production; and

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English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.36.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
    - 110.36.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.37.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;

- 110.37.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.38.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
    - 110.38.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making,

and evaluating the work of the group based on agreed-upon criteria.

- 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.39.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
  - 110.39.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

Social Studies

- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.E: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections between historical events over time;
      - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.D: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections over time;

        - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
    - Economics with Emphasis on the Free Enterprise System and Its Benefits
        - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
            - 113.31.d.21.A: analyze economic information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, and drawing inferences and conclusions;
            - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

Mathematics

- Algebra 2
    - 111.40.c.7: Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on expressions and to solve equations. The student is expected to:
        - 111.40.c.7.A: add, subtract, and multiply complex numbers;

Science

- Aquatic Science:
    - 112.47.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.47.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.47.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
        - 112.47.c.1.C: use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards

- 112.47.c.1.D: use appropriate tools such as Global Positioning System (GPS), Geographic Information System (GIS), weather balloons, buoys, water testing kits, meter sticks, metric rulers, pipettes, graduated cylinders, standard laboratory glassware, balances, timing devices, pH meters or probes, various data collecting probes, thermometers, calculators, computers, internet access, turbidity testing devices, hand magnifiers, work and disposable gloves, compasses, first aid kits, field guides, water quality test kits or probes, 30-meter tape measures, tarps, ripple tanks, trowels, screens, buckets, sediment samples equipment, cameras, flow meters, cast nets, kick nets, seines, computer models, spectrophotometers, stereomicroscopes, compound microscopes, clinometers, and field journals, various prepared slides, hand lenses, hot plates, Petri dishes, sampling nets, waders, leveling grade rods (Jason sticks), protractors, inclination and height distance calculators, samples of biological specimens or structures, core sampling equipment, fish tanks and associated supplies, and hydrometers; 112.47.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
- 112.47.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models

▪ 112.47.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
  - 112.47.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories

▪ 112.47.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
  - 112.47.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student

        - 112.47.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
    - 112.47.c.7: Science Concept: The student knows about the interdependence and interactions that occur in aquatic environments. The student is expected to:
        - 112.47.c.7.C: identify variables that affect the solubility of carbon dioxide and oxygen in water
- Chemistry:
    - 112.43.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.43.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.43.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
        - 112.43.c.1.C: use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards
        - 112.43.c.1.D: use appropriate tools such as Safety Data Sheets (SDS), scientific or graphing calculators, computers and probes, electronic balances, an adequate supply of consumable chemicals, and sufficient scientific glassware such as beakers, Erlenmeyer flasks, pipettes, graduated cylinders, volumetric flasks, and burettes
        - 112.43.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
        - 112.43.c.1.F: organize quantitative and qualitative data using oral or written lab reports, labeled drawings, particle diagrams, charts, tables, graphs, journals, summaries, or technology-based reports;

- 112.43.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.43.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
- 112.43.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.43.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
    - 112.43.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- 112.43.c.11: Science concepts. The student understands and can apply the factors that influence the behavior of solutions. The student is expected to:
    - 112.43.c.11.A: describe the unique role of water in solutions in terms of polarity
    - 112.43.c.11.B: distinguish among types of solutions, including electrolytes and nonelectrolytes and unsaturated, saturated, and supersaturated solutions
    - 112.43.c.11.C: investigate how solid and gas solubilities are influenced by temperature using solubility curves and how rates of dissolution are influenced by temperature, agitation, and surface area
    - 112.43.c.11.D: investigate the general rules regarding solubility and predict the solubility of the products of a double replacement reaction
    - 112.43.c.11.E: calculate the concentration of solutions in units of molarity
- 112.43.c.13: Science concepts. The student understands the energy changes that occur in chemical reactions. The student is expected to:
    - 112.43.c.13.B: investigate the process of heat transfer using calorimetry

TEXAS FARM BUREAU®

Agriculture, Food, and Natural Resources

- Floral Design
  - 130.20.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.20.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in floral design and interior landscape development;
  - 130.20.c.8: The student knows the management factors of floral enterprises. The student is expected to:
    - 130.20.c.8.a: use temperature, preservatives, and cutting techniques to increase keeping quality of floral materials;
    - 130.20.c.8.b: identify tools, chemicals, and equipment used in floral design;
    - 130.20.c.8.e: demonstrate technical skills for increasing the preservation of cut flowers and foliage.
- Landscape Design and Management
  - 130.21.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.21.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in landscape design and management;
  - 130.21.c.7: The student performs landscape maintenance services. The student is expected to:
    - 130.21.c.7.c: analyze nutritional needs of plants;
    - 130.21.c.7.h: demonstrate lawn management techniques.
- Turfgrass Management
  - 130.22.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.22.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in turf grass management;
  - 130.22.c.5: The student identifies and implements common cultural and physiological requirements for cool and warm season turf grass maintenance. The student is expected to:
    - 130.22.c.5.f: analyze nutritional needs of turf grass;

- 130.22.c.5.i: use turf grass pesticide application techniques and equipment properly; and

- Horticulture Science
  - 130.23.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.23.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in horticulture;
  - 130.23.c.5: The student manages and controls common pests of horticultural plants. The student is expected to:
    - 130.23.c.5.b: demonstrate safe practices in selecting, applying, storing, and disposing of chemicals; and
    - 130.23.c.5.c: explain parts of a pesticide label.
- Greenhouse Operations
  - 130.24.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.24.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, and critical thinking in greenhouse operations and production;
  - 130.24.c.8: The student identifies and investigates greenhouse crop production factors. The student is expected to:
    - 130.24.c.8.e: analyze the effect of nutrients on greenhouse plant growth;
  - 130.24.c.9: The student investigates pest identification and control methods in the greenhouse environment. The student is expected to:
    - 130.24.c.9.c: use appropriate greenhouse pesticide application techniques and equipment;
    - 130.24.c.9.d: research chemicals used to regulate plant growth in the greenhouse; and

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English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.

▪ 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.36.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
- 110.36.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

○ English II

▪ 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.

▪ 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.37.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
- 110.37.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

○ English III

▪ 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral

language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
- 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

▪ 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.38.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
- 110.38.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

○ <u>English IV</u>

▪ 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
- 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

▪ 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.39.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
- 110.39.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

Mathematics – No Math TEKS

Social Studies

- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

Mathematics – No Math TEKS

Science

- Aquatic Science:
  - 112.47.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain

phenomena, or design solutions using appropriate tools and models. The student is expected to:

- 112.47.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations

- 112.47.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
  - 112.47.c.2.C: use mathematical calculations to assess quantitative relationships in data
  - 112.47.c.2.D: evaluate experimental and engineering designs
- 112.47.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
  - 112.47.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
- 112.47.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
  - 112.47.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- 112.47.c.10: Science concepts. The student knows the origin and potential uses of fresh water. The student is expected to:
  - 112.47.c.10.D: describe human uses of fresh water and how human freshwater use competes with that of other organisms
- 112.47.c.11: Science concepts. The student knows that geological phenomena and fluid dynamics affect aquatic systems. The student is expected to:
  - 112.47.c.11.B: identify interrelationships between ocean currents, climates, and geologic features such as continental margins, active and passive margins, abyssal

plains, island atolls, peninsulas, barrier islands, and hydrothermal vents

- Environmental System:
  - 112.50.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.50.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
  - 112.50.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
    - 112.50.c.2.C: use mathematical calculations to assess quantitative relationships in data
  - 112.50.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.50.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
  - 112.50.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.50.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
  - 112.50.c.7: Science concepts. The student knows the sources and flow of energy through an environmental system. The student is expected to:
    - 112.50.c.7.A: describe the interactions between the components of the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere

        - 112.50.c.12: Science concepts. The student understands how ethics and economic priorities influence environmental decisions. The student is expected to:
            - 112.50.c.12.A: evaluate cost-benefit trade-offs of commercial activities such as municipal development, food production, deforestation, over-harvesting, mining, and use of renewable and non-renewable energy sources
            - 112.50.c.12.C: analyze how ethical beliefs influence environmental scientific and engineering practices such as methods for food production, water distribution, energy production, and the extraction of minerals
    - Earth Systems Science:
        - 112.49.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
            - 112.49.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.49.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
            - 112.49.c.2.C: use mathematical calculations to assess quantitative relationships in data
        - 112.49.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
            - 112.49.c.**3.**B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
        - 112.49.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
            - 112.49.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a

science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers

- 112.49.c.12: Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:
  - 112.49.c.12.C: analyze the natural and anthropogenic factors that affect the severity and frequency of extreme weather events and the hazards associated with these events
  - 112.49.c.12.D: analyze recent global ocean temperature data to predict the consequences of changing ocean temperature on evaporation, sea level, algal growth, coral bleaching, and biodiversity
  - 112.49.c.12.E: predict how human use of Texas's naturally occurring resources such as fossil fuels, minerals, soil, solar energy, and wind energy directly and indirectly changes the cycling of matter and energy through Earth's systems

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;
    - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
    - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
  - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
    - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and

        - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
    - 130.2.c.12: The student develops technical knowledge and skills related to animal systems. The student is expected to:
        - 130.2.c.12.a: describe animal growth and development;
        - 130.2.c.12.d: explain animal selection, reproduction, breeding, and genetics.
    - 130.2.c.13: The student describes the principles of food products and processing
        - 130.2.c.13.a: evaluate food products and processing systems;
        - 130.2.c.13.b: determine trends in world food production;
- Livestock Production
    - 130.7.c.1: The student demonstrates professional standards/employability skills as required by business and industry The student is expected to:
        - 130.7.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in animal systems;
    - 130.7.c.5: The student explains anatomy and physiology related to nutrition, reproduction, health, and management of livestock species. The student is expected to:
        - 130.7.c.5.a: explain the skeletal, muscular, respiratory, reproductive, and circulatory systems of animals; and
- Food Technology and Safety
    - 130.15.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.15.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in food processing;
    - 130.15.c.3: The student explains the impact of food science systems. The student is expected to:
        - 130.15.c.3.a: explain the significance of food science systems;
        - 130.15.c.3.b: define trends in food production, world population, and supply and demand for food products;
    - 130.15.c.4: The student analyzes the nutritive value of food constituents. The student is expected to:
        - 130.15.c.4.a: define the terms used in food technology;

        - 130.15.c.9: The student describes the processing, packaging, quality analysis, and marketing of eggs, poultry, and fish and their by-products. The student is expected to:
            - 130.15.c.9.a: describe processing techniques;
            - 130.15.c.9.f: describe marketing procedures for eggs, poultry, fish, and seafood.
    - Advanced Plant and Soil Science
        - 130.25.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
            - 130.25.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in plant systems;
        - 130.25.c.18: The student demonstrates skills related to the human, scientific, and technological dimensions of crop production and the resources necessary for producing domesticated plants. The student is expected to:
            - 130.25.c.18.a: describe the growth and development of major crops;

PLANET ZORCON

English Language Arts and Reading

- English I
    - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
        - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
        - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
    - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:

- 110.36.c.4.A: establish purpose for reading assigned and self-selected texts;
- 110.36.c.4.F: make inferences and use evidence to support understanding;
- 110.36.c.4.G: evaluate details read to determine key ideas;
- 110.36.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, and annotating when understanding breaks down.

▪ 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.36.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
- 110.36.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- 110.36.c.5.F: respond using acquired content and academic vocabulary as appropriate;

○ <u>English II</u>

▪ 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
- 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.

▪ 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:

- 110.37.c.4.A: establish purpose for reading assigned and self-selected texts;
- 110.37.c.4.F: make inferences and use evidence to support understanding;
- 110.37.c.4.G: evaluate details read to determine key ideas;
- 110.37.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, and annotating when understanding breaks down.

▪ 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.37.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
- 110.37.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- 110.37.c.5.F: respond using acquired content and academic vocabulary as appropriate;

○ English III

▪ 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
- 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
- 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

▪ 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses

metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:

- 110.38.c.4.A: establish purpose for reading assigned and self-selected texts;
- 110.38.c.4.F: make inferences and use evidence to support understanding;
- 110.38.c.4.G: evaluate details read to understand key ideas;
- 110.38.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, annotating, and using outside sources when understanding breaks down.

▪ 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.38.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
- 110.38.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- 110.38.c.5.F: respond using acquired content and academic vocabulary as appropriate;

o English IV

▪ 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
- 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
- 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

- 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.39.c.4.A: establish purpose for reading assigned and self-selected texts;
  - 110.39.c.4.F: make inferences and use evidence to support understanding;
  - 110.39.c.4.G: evaluate details read to analyze key ideas;
  - 110.39.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, annotating, and using outside sources when understanding breaks down.
- 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.39.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
  - 110.39.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
  - 110.39.c.5.F: respond using acquired content and academic vocabulary as appropriate;

Social Studies

- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- World Geography Studies
  - 113.43.c.8: Geography. The student understands how people, places, and environments are connected and interdependent. The student is expected to:

        - 113.43.c.8.A: compare ways that humans depend on, adapt to, and modify the physical environment, including the influences of culture and technology;
        - 113.43.c.8.C: evaluate the economic and political relationships between settlements and the environment, including sustainable development and renewable/non-renewable resources.
    - 113.43.c.19: Science, technology, and society. The student understands the impact of technology and human modifications on the physical environment. The student is expected to:
        - 113.43.c.19.C: analyze the environmental, economic, and social impacts of advances in technology on agriculture and natural resources.
    - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
        - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- Economics with Emphasis on the Free Enterprise System and Its Benefits
    - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
        - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

Mathematics – No Math TEKS

Science

- Biology:
    - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations

        - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
        - 112.42.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
    - 112.42.c.13: Interdependence Within Environmental Systems. The student knows that organisms have an organizational structure and variations can influence survival of populations. The student is expected to:
        - 112.42.c.13.C: explain the significance of the carbon and nitrogen cycles to ecosystem stability and analyze the consequences of disrupting these cycles
        - 112.42.c.13.D: explain how environmental change, including change due to human activity, affects biodiversity and analyze how changes in biodiversity impact ecosystem stability
- <u>Environmental System:</u>
    - 112.50.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.50.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.50.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.50.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the

importance of scientific research and innovation on society. The student is expected to:

- 112.50.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers

- 112.50.c.5: Science concepts. The student knows the relationships of biotic and abiotic factors within habitats, ecosystems, and biomes. The student is expected to:
  - 112.50.c.5.C: evaluate the effects of fluctuations in abiotic factors on local ecosystems and local biomes
  - 112.50.c.5.E: use models to predict how the introduction of an invasive species may alter the food chain and affect existing populations in an ecosystem
  - 112.50.c.5.F: use models to predict how species extinction may alter the food chain and affect existing populations in an ecosystem
  - 112.50.c.5.G: predict changes that may occur in an ecosystem if genetic diversity is increased or decreased
- 112.50.c.6: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
  - 112.50.c.6.A: compare and contrast land use and management methods and how they affect land attributes such as fertility, productivity, economic value, and ecological stability
  - 112.50.c.6.B: relate how water sources, management, and conservation affect water uses and quality
  - 112.50.c.6.C: document the use and conservation of both renewable and non-renewable resources as they pertain to sustainability
  - 112.50.c.6.D: identify how changes in limiting resources such as water, food, and energy affect local ecosystems
  - 112.50.c.6.E: analyze and evaluate the economic significance and interdependence of resources within the local environmental system
- 112.50.c.7: Science concepts. The student knows the sources and flow of energy through an environmental system. The student is expected to:

- 112.50.c.7.A: describe the interactions between the components of the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere
- 112.50.c.7.C: explain the flow of heat energy in an ecosystem, including conduction, convection, and radiation
- 112.50.c.7.D: identify and describe how energy is used, transformed, and conserved as it flows through ecosystems

- 112.50.c.8: Science concepts. The student knows the relationship between carrying capacity and changes in populations and ecosystems. The student is expected to:
  - 112.50.c.8.A: compare exponential and logistical population growth using graphical representations
  - 112.50.c.8.B: identify factors that may alter carrying capacity such as disease; natural disaster; available food, water, and livable space; habitat fragmentation; and periodic changes in weather;
  - 112.50.c.8.C: calculate changes in population size in ecosystems
  - 112.50.c.8.D: analyze and make predictions about the impact on populations of geographic locales due to diseases, birth and death rates, urbanization, and natural events such as migration and seasonal changes
- 112.50.c.9: Science concepts. The student knows that environments change naturally. The student is expected to:
  - 112.50.c.9.C: examine how natural processes such as succession and feedback loops can restore habitats and ecosystems
  - 112.50.c.9.E: analyze the impact of natural global climate change on ice caps, glaciers, ocean currents, and surface temperatures
- 112.50.c.10: Science concepts. The student knows how humans impact environmental systems through emissions and pollutants. The student is expected to:
  - 112.50.b.10.C: investigate the effects of pollutants such as chlorofluorocarbons, greenhouse gases, pesticide runoff, nuclear waste, aerosols, metallic ions, and heavy metals, as well as thermal, light, and noise pollution
  - 112.50.b.10.D: evaluate indicators of air, soil, and water quality against regulatory standards to determine the health of an ecosystem

    - 112.50.b.10.E: distinguish between the causes and effects of global warming and ozone depletion, including the causes, the chemicals involved, the atmospheric layer, the environmental effects, the human health effects, and the relevant wavelengths on the electromagnetic spectrum (IR and UV)
- 112.50.c.11: Science concepts. The student understands how individual and collective actions impact environmental systems. The student is expected to:
    - 112.50.c.11.A: evaluate the negative effects of human activities on the environment, including overhunting, overfishing, ecotourism, all-terrain vehicles, and personal watercraft
    - 112.50.c.11.B: evaluate the positive effects of human activities on the environment, including habitat restoration projects, species preservation efforts, nature conservancy groups, game and wildlife management, and ecotourism
    - 112.50.c.11.C: research the advantages and disadvantages of "going green" such as organic gardening and farming, natural methods of pest control, hydroponics, xeriscaping, energy-efficient homes and appliances, and hybrid cars
- 112.50.c.12: Science concepts. The student understands how ethics and economic priorities influence environmental decisions. The student is expected to:
    - 112.50.c.12.A: evaluate cost-benefit trade-offs of commercial activities such as municipal development, food production, deforestation, over-harvesting, mining, and use of renewable and non-renewable energy sources
    - 112.50.c.12.B: evaluate the economic impacts of individual actions on the environment such as overbuilding, habitat destruction, poaching, and improper waste disposal
    - 112.50.c.12.C: analyze how ethical beliefs influence environmental scientific and engineering practices such as methods for food production, water distribution, energy production, and the extraction of minerals
    - 112.50.c.12.D: discuss the impact of research and technology on social ethics and legal practices in situations such as the design of new buildings, recycling, or emission standards

- 112.50.c.12.E: argue from evidence whether or not a healthy economy and a healthy environment are mutually exclusive

Career Development

- Career Preparation General
  - 127.20.d. 8: The student identifies skills and attributes necessary for professional success. The student is expected to:
    - 127.20.d. 8.a: evaluate and compare career options, including salaries and benefits;

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.a: identify career development, education, and entrepreneurship opportunities in the field of agriculture, food, and natural resources;
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
    - 130.2.c.1.c: demonstrate knowledge of personal and occupational safety, environmental regulations, and first-aid policy in the workplace;
    - 130.2.c.1.d: analyze employers' expectations such as appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills; and
    - 130.2.c.1.e: identify careers in agriculture, food, and natural resources with required aptitudes in science, technology, engineering, mathematics, language arts, and social studies.
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;
    - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
    - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;

- 130.2.c.4.d: identify potential future scenarios for agriculture, food, and natural resources systems, including global impacts;
- 130.2.c.4.e: describe how emerging technologies and globalization impacts agriculture, food, and natural resources; and
- 130.2.c.4.f: compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment,

▪ 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
- 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
- 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.

▪ 130.2.c.15: The student explains the relationship between agriculture, food, and natural resources and the environment. The student is expected to:
- 130.2.c.15.a: determine the effects of agriculture, food, and natural resources upon safety, health, and the environment;

○ <u>Energy and Natural Resource Technology</u>

▪ 130.11.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
- 130.11.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in energy and natural resources;

▪ 130.11.c.4: The student discusses the importance and scope of natural resources. The student is expected to:
- 130.11.c.4.a: identify various types of natural resources;
- 130.11.c.4.b: discuss renewable and non-renewable energy resources and their impact on the environment;
- 130.11.c.4.c: analyze the impacts of natural resources and their effects on the agricultural economy; and

▪ 130.11.c.8: The student explains the effects of natural resource use. The student is expected to:
- 130.11.c.8.a: identify the progression of use of natural resources leading to environmental degradation;
- 130.11.c.8.b: explain the impact of human population dynamics on the environment;

- 130.11.c.8.c: discuss the abuse of natural resources; and
- 130.11.c.8.d: communicate the environmental consequences of natural resource use such as the impact on living organisms.

- Advanced Energy and Natural Resource Technology
  - 130.12.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.12.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in energy and natural resources;
  - 130.12.c.4: The student determines and evaluates the importance and scope of energy and natural resources. The student is expected to:
    - 130.12.c.4.a: identify various types of natural resources;
    - 130.12.c.4.b: identify renewable, non-renewable, and sustainable energy resources and determine their availability;

PLANT-SOIL INTERACTIONS

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.36.c.4.A: establish purpose for reading assigned and self-selected texts;

        - 110.36.c.4.F: make inferences and use evidence to support understanding;
        - 110.36.c.4.G: evaluate details read to determine key ideas;
        - 110.36.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, and annotating when understanding breaks down.
    - 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
        - 110.36.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
        - 110.36.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
        - 110.36.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- English II
    - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
        - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
        - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
    - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.37.c.4.A: establish purpose for reading assigned and self-selected texts;

        - 110.37.c.4.F: make inferences and use evidence to support understanding;
        - 110.37.c.4.G: evaluate details read to determine key ideas;
        - 110.37.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, and annotating when understanding breaks down.
    - 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
        - 110.37.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
        - 110.37.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
        - 110.37.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- English III
    - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
        - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
        - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
    - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:

- 110.38.c.4.A: establish purpose for reading assigned and self-selected texts;
- 110.38.c.4.F: make inferences and use evidence to support understanding;
- 110.38.c.4.G: evaluate details read to understand key ideas;
- 110.38.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, annotating, and using outside sources when understanding breaks down.

▪ 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.38.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
- 110.38.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- 110.38.c.5.F: respond using acquired content and academic vocabulary as appropriate;

○ English IV

▪ 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
- 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
- 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

▪ 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses

metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.39.c.4.A: establish purpose for reading assigned and self-selected texts;
    - 110.39.c.4.F: make inferences and use evidence to support understanding;
    - 110.39.c.4.G: evaluate details read to analyze key ideas;
    - 110.39.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, annotating, and using outside sources when understanding breaks down.
  - 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.39.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
    - 110.39.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
    - 110.39.c.5.F: respond using acquired content and academic vocabulary as appropriate;

Social Studies
- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

Mathematics – No Math TEKS

Science

- Biology:
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
  - 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.42.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
  - 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.42.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student

        - 112.42.c.4.B: relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content
    - 112.42.c.12: Science concepts--biological structures, functions, and processes. The student knows that multicellular organisms are composed of multiple systems that interact to perform complex functions. The student is expected to:
        - 112.42.c.12.B: explain how the interactions that occur among systems that perform functions of transport, reproduction, and response in plants are facilitated by their structures
    - 112.42.c.13: Interdependence Within Environmental Systems. The student knows that organisms have an organizational structure and variations can influence survival of populations. The student is expected to:
        - 112.42.c.13.C: explain the significance of the carbon and nitrogen cycles to ecosystem stability and analyze the consequences of disrupting these cycles
- <u>Aquatic Science:</u>
    - 112.47.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.47.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.47.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
        - 112.47.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.47.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:

        - 112.47.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
    - 112.47.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
        - 112.47.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
        - 112.47.c.4.B: relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content
    - 112.47.c.10: Science concepts. The student knows the origin and potential uses of fresh water. The student is expected to:
        - 112.47.c.10.A: identify sources of water in a watershed, including rainfall, groundwater, and surface water
        - 112.47.c.10.B: identify factors that contribute to how water flows through a watershed
        - 112.47.c.10.C: analyze water quantity and quality in a local watershed or aquifer
        - 112.47.c.10.D: describe human uses of fresh water and how human freshwater use competes with that of other organisms
- <u>Environmental System:</u>
    - 112.50.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.50.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.47.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
        - 112.50.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data

tables, digital tools, diagrams, scientific drawings, and student-prepared models

- 112.50.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
  - 112.50.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
- 112.50.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
  - 112.50.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
  - 112.50.c.4.B: relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content
- 112.50.c.9: Science concepts. The student knows that environments change naturally. The student is expected to:
  - 112.50.c.9.B: explain how regional changes in the environment may have global effects
  - 112.50.c.9.C: examine how natural processes such as succession and feedback loops can restore habitats and ecosystems
  - 112.50.c.9.D: describe how temperature inversions have short-term and long-term effects, including El Niño and La Niña oscillations, ice cap and glacial melting, and changes in ocean surface temperatures
- 112.50.c.12: Science concepts. The student understands how ethics and economic priorities influence environmental decisions. The student is expected to:
  - 112.50.c.12.C: analyze how ethical beliefs influence environmental scientific and engineering practices such as methods for food production, water distribution, energy production, and the extraction of minerals
- 112.50.c.13: Science concepts. The student knows how legislation mediates human impacts on the environment. The student is expected to:

        - 112.50.c.13.A: describe past and present state and national legislation, including Texas automobile emissions regulations, the National Park Service Act, the Clean Air Act, the Clean Water Act, the Soil and Water Resources Conservation Act, and the Endangered Species Act
        - 112.50.c.13.B: evaluate the goals and effectiveness of past and present international agreements such as the environmental Antarctic Treaty System, the Montreal Protocol, the Kyoto Protocol, and the Paris Climate Accord
- Earth Systems Science:
    - 112.49.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.49.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.49.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
        - 112.49.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.49.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
        - 112.49.c.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
    - 112.49.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
        - 112.49.c.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
        - 112.49.c.B: relate the impact of past and current research on scientific thought and society, including

research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content

- 112.49.c.6: Science concepts. The student knows the evidence for the formation and composition of Earth's atmosphere, hydrosphere, biosphere, and geosphere. The student is expected to:
  - 112.49.c.6.C: evaluate the evidence for changes to the chemical composition of Earth's atmosphere prior to the introduction of oxygen
  - 112.49.c.6.D: evaluate scientific hypotheses for the origin of life through abiotic chemical processes
- 112.49.c.11: Science concepts. The student knows that dynamic and complex interactions among Earth's systems produce climate and weather. The student is expected to:
  - 112.49.c.11.A: analyze how energy transfer through Milankovitch cycles, albedo, and differences in atmospheric and surface absorption are mechanisms of climate
  - 112.49.c.11.B: describe how Earth's atmosphere is chemically and thermally stratified and how solar radiation interacts with the layers to cause the ozone layer, the jet stream, Hadley and Ferrel cells, and other atmospheric phenomena
- 112.49.c.12: Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:
  - 112.49.c.12.A: evaluate the impact on humans of natural changes in Earth's systems such as earthquakes, tsunamis, and volcanic eruptions
  - S112.49.c.12.C: analyze the natural and anthropogenic factors that affect the severity and frequency of extreme weather events and the hazards associated with these events

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:

        - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
    - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
        - 130.2.c.4.a: define the scope of agriculture;
        - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
        - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
    - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
        - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
        - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
    - 130.2.c.10: The student develops technical knowledge and skills related to soil systems. The student is expected to:
        - 130.2.c.10.a: identify the components and properties of soils;
        - 130.2.c.10.b: identify and describe the process of soil formation; and
    - 130.2.c.11: The student develops technical knowledge and skills related to plant systems. The student is expected to:
        - 130.2.c.11.a: describe the structure and functions of plant parts;
        - 130.2.c.11.b: discuss and apply plant germination, growth, and development
        - 130.2.c.11.d: identify plants of importance to agriculture, food, and natural resources; and
- <u>Advanced Plant and Soil Science</u>
    - 130.25.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.25.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in plant systems;

- 130.25.c.4: The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to:
  - 130.25.c.4.a: in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student;
  - 130.25.c.4.b: communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials;
- 130.25.c.6: The student analyzes plant and soil science as it relates to plant and soil relationships affecting the production of food, fiber, and other economic crops. The student is expected to:
  - 130.25.c.6.a: explain the importance and interrelationship of soil and plants; and
- 130.25.c.7: The student develops scenarios for advances in plant and soil science. The student is expected to:
  - 130.25.c.7.a: design, conduct, and complete research in a laboratory or field investigation to solve problems in plant and soil science;
  - 130.25.c.7.b: use charts, tables, and graphs to prepare written summaries of results and data obtained in a laboratory or field investigation;
  - 130.25.c.7.c: organize, analyze, evaluate, make inferences, and predict trends from data obtained in a laboratory or field investigation; and
  - 130.25.c.7.d: communicate valid outcomes and solutions.
- 130.25.c.9: The student analyzes soil science as it relates to food and fiber production. The student is expected to:
  - 130.25.c.9.a: explain soil formation;
  - 130.25.c.9.b: evaluate the properties and nature of soils;
- 130.25.c.10: The student describes the relationship between resources within environmental systems. The student is expected to:
  - 130.25.c.10.e: evaluate the impact of human activity and technology on soil fertility and productivity;

- 130.2.5.c.12: The student maps the process of soil formation influenced by weathering, including erosion processes due to water, wind, and mechanical factors influenced by climate. The student is expected to:
  - 130.25.c.12.a: illustrate the role of weathering in soil formations;

PLASMID PROBLEM SOLVING

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.36.c.4.A: establish purpose for reading assigned and self-selected texts;
    - 110.36.c.4.F: make inferences and use evidence to support understanding;
    - 110.36.c.4.G: evaluate details read to determine key ideas;
    - 110.36.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, and annotating when understanding breaks down.
  - 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds

to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.36.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
- 110.36.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- 110.36.c.5.F: respond using acquired content and academic vocabulary as appropriate;

- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.37.c.4.A: establish purpose for reading assigned and self-selected texts;
    - 110.37.c.4.F: make inferences and use evidence to support understanding;
    - 110.37.c.4.G: evaluate details read to determine key ideas;
    - 110.37.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, and annotating when understanding breaks down.
  - 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds

to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.37.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
- 110.37.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- 110.37.c.5.F: respond using acquired content and academic vocabulary as appropriate;

- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.38.c.4.A: establish purpose for reading assigned and self-selected texts;
    - 110.38.c.4.F: make inferences and use evidence to support understanding;
    - 110.38.c.4.G: evaluate details read to understand key ideas;
    - 110.38.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, annotating, and using outside sources when understanding breaks down.

- 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.38.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
  - 110.38.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
  - 110.38.c.5.F: respond using acquired content and academic vocabulary as appropriate;

- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.39.c.4.A: establish purpose for reading assigned and self-selected texts;
    - 110.39.c.4.F: make inferences and use evidence to support understanding;
    - 110.39.c.4.G: evaluate details read to analyze key ideas;
    - 110.39.c.4.I: monitor comprehension and make adjustments such as re-reading, using background

knowledge, asking questions, annotating, and using outside sources when understanding breaks down.

- 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.39.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
  - 110.39.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
  - 110.39.c.5.F: respond using acquired content and academic vocabulary as appropriate;

Social Studies

- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.E: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections between historical events over time;
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.D: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections over time;

        - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
    - Economics with Emphasis on the Free Enterprise System and Its Benefits
        - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
            - 113.31.d.21.A: analyze economic information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, and drawing inferences and conclusions;
            - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

Mathematics – No Math TEKS

Science

- Biology:
    - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
        - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.42.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:

        - 112.42.c.2.A: identify advantages and limitations of models such as their size, properties, and materials
        - 112.42.c.2.B: analyze data by identifying significant statistical features, patterns, sources of error, and limitations
    - 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
        - 112.42.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
        - 112.42.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
        - 112.42.c.3.C: engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence
    - 112.42.c.5: Biological Structures, Functions, and Processes: The student knows that biological structures at multiple levels of organization perform specific functions and processes that affect life. The student is expected to:
        - 112.42.c.5.A: relate the functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids, to the structure and function of a cell
        - 112.42.c.5.B: compare and contrast prokaryotic and eukaryotic cells, including their complexity, and compare and contrast scientific explanations for cellular complexity
    - 112.42.c.11: Biological Structures, Functions, and Processes. Science concepts--biological structures, functions, and processes. The student knows the significance of matter cycling, energy flow, and enzymes in living organisms. The student is expected to:
        - 112.42.c.11.B: investigate and explain the role of enzymes in facilitating cellular processes

<u>Agriculture, Food, and Natural resources</u>

- <u>Advanced Plant and Soil Science</u>
    - 130.25.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:

        - 130.25.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in plant systems;
    - 130.25.c.16: The student identifies how plants grow and how specialized cells, tissues, and organs develop. The student is expected to:
        - 130.25.c.16.a: compare cells from different parts of the plant, including roots, stems, and leaves, to show specialization of structures and functions; and
        - 130.25.c.16.b: sequence the levels of organization in multicellular organisms that relate the parts to each other and the whole.
    - 130.25.c.17: The student diagrams the structure and function of nucleic acids in the mechanism of genetics. The student is expected to:
        - 130.25.c.17.a: describe components of deoxyribonucleic acid (DNA) and illustrate how information for specifying the traits of an organism is carried in DNA;
        - 130.25.c.17.b: identify and illustrate how changes in DNA cause phenotypic or genotypic changes;
        - 130.25.c.17.c: compare and contrast genetic variations observed in plants and animals; and

POPULATIONS

English Language Arts and Reading

- English I
    - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
        - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
        - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
    - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses

metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:

- 110.36.c.4.A: establish purpose for reading assigned and self-selected texts;
- 110.36.c.4.F: make inferences and use evidence to support understanding;
- 110.36.c.4.G: evaluate details read to determine key ideas;
- 110.36.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, and annotating when understanding breaks down.

▪ 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.36.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
- 110.36.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- 110.36.c.5.F: respond using acquired content and academic vocabulary as appropriate;

o English II

▪ 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
- 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.

▪ 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses

metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:

- 110.37.c.4.A: establish purpose for reading assigned and self-selected texts;
- 110.37.c.4.F: make inferences and use evidence to support understanding;
- 110.37.c.4.G: evaluate details read to determine key ideas;
- 110.37.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, and annotating when understanding breaks down.

▪ 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.37.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
- 110.37.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- 110.37.c.5.F: respond using acquired content and academic vocabulary as appropriate;

○ English III

▪ 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
- 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
- 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

        - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
            - 110.38.c.4.A: establish purpose for reading assigned and self-selected texts;
            - 110.38.c.4.F: make inferences and use evidence to support understanding;
            - 110.38.c.4.G: evaluate details read to understand key ideas;
            - 110.38.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, annotating, and using outside sources when understanding breaks down.
        - 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
            - 110.38.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
            - 110.38.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
            - 110.38.c.5.F: respond using acquired content and academic vocabulary as appropriate;
    - English IV
        - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
            - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
            - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
            - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making,

and evaluating the work of the group based on agreed-upon criteria.

- 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.39.c.4.A: establish purpose for reading assigned and self-selected texts;
  - 110.39.c.4.F: make inferences and use evidence to support understanding;
  - 110.39.c.4.G: evaluate details read to analyze key ideas;
  - 110.39.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, annotating, and using outside sources when understanding breaks down.
- 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.39.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
  - 110.39.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
  - 110.39.c.5.F: respond using acquired content and academic vocabulary as appropriate;

Social Studies

- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:

- 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

Mathematics

- Algebra 1
  - 111.39.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
    - 111.39.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
    - 111.39.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
    - 111.39.c.1.E: create and use representations to organize, record, and communicate mathematical ideas;
- Mathematical Models with Applications
  - 111.43.c.9: Mathematical modeling in social sciences. The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences. The student is expected to:
    - 111.43.c.9.A: interpret information from various graphs, including line graphs, bar graphs, circle graphs, histograms, scatterplots, dot plots, stem-and-leaf plots, and box and whisker plots, to draw conclusions from the data and determine the strengths and weaknesses of conclusions;
- Advanced Quantitative Reasoning
  - 111.44.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

- 111.44.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
- 111.44.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
- 111.44.c.1.E: create and use representations to organize, record, and communicate mathematical ideas;

- Statistics
  - 111.47.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
    - 111.47.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
    - 111.47.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
    - 111.47.c.1.C: select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;
    - 111.47.c.1.D: communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;
  - 111.47.c.5: Probability and random variables. The student applies the mathematical process standards to connect probability and statistics. The student is expected to:
    - 111.47.c.5.A: determine probabilities, including the use of a two-way table;

Science

- Environmental System:
  - 112.50.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:

    - 112.50.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.47.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.50.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
- 112.50.c.5: Science concepts. The student knows the relationships of biotic and abiotic factors within habitats, ecosystems, and biomes. The student is expected to:
    - 112.50.c.5.G: predict changes that may occur in an ecosystem if genetic diversity is increased or decreased
- 112.50.c.6: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
    - 112.50.c.6.D: identify how changes in limiting resources such as water, food, and energy affect local ecosystems
    - 112.50.c.6.E: analyze and evaluate the economic significance and interdependence of resources within the local environmental system
    - 112.50.c.6.F: evaluate the impact of waste management methods such as reduction, reuse, recycling, upcycling, and composting on resource availability in the local environment
- 112.50.c.8: Science concepts. The student knows the relationship between carrying capacity and changes in populations and ecosystems. The student is expected to:
    - 112.50.c.8.A: compare exponential and logistical population growth using graphical representations
    - 112.50.c.8.B: identify factors that may alter carrying capacity such as disease; natural disaster; available food, water, and livable space; habitat fragmentation; and periodic changes in weather;
    - 112.50.c.8.C: calculate changes in population size in ecosystems
    - 112.50.c.8.D: analyze and make predictions about the impact on populations of geographic locales due to diseases, birth and death rates, urbanization, and natural events such as migration and seasonal changes

- 112.50.c.12: Science concepts. The student understands how ethics and economic priorities influence environmental decisions. The student is expected to:
  - 112.50.c.12.A: evaluate cost-benefit trade-offs of commercial activities such as municipal development, food production, deforestation, over-harvesting, mining, and use of renewable and non-renewable energy sources
  - 112.50.c.12.B: evaluate the economic impacts of individual actions on the environment such as overbuilding, habitat destruction, poaching, and improper waste disposal
  - 112.50.c.12.C: analyze how ethical beliefs influence environmental scientific and engineering practices such as methods for food production, water distribution, energy production, and the extraction of minerals

- Earth Systems Science:
  - 112.49.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.49.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.49.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.49.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
  - 112.49.c.12: Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:
    - 112.49.c.12.A: evaluate the impact on humans of natural changes in Earth's systems such as earthquakes, tsunamis, and volcanic eruptions
    - 112.49.c.12.C: analyze the natural and anthropogenic factors that affect the severity and frequency of extreme weather events and the hazards associated with these events

- 112.49.c.12.D: analyze recent global ocean temperature data to predict the consequences of changing ocean temperature on evaporation, sea level, algal growth, coral bleaching, and biodiversity

- 112.49.c.13: Science concepts. The student explores global policies and careers related to the life cycles of Earth's resources. The student is expected to:
  - 112.49.c.13.A: analyze the policies related to resources from discovery to disposal, including economics, health, technological advances, resource type, concentration and location, waste disposal and recycling, mitigation efforts, and environmental impacts

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources:
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;
    - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
    - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
    - 130.2.c.4.d: identify potential future scenarios for agriculture, food, and natural resources systems, including global impacts;
    - 130.2.c.4.e: describe how emerging technologies and globalization impacts agriculture, food, and natural resources; and
    - 130.2.c.4.f: compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment,
  - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
    - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and

- 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.

PROPERTIES OF SOILS

English language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.36.c.4.F: make inferences and use evidence to support understanding;
    - 110.36.c.4.G: evaluate details read to determine key ideas;
  - 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.36.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
    - 110.36.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

        - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
        - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
        - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
    - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.37.c.4.F: make inferences and use evidence to support understanding;
        - 110.37.c.4.G: evaluate details read to determine key ideas;
    - 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
        - 110.37.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
        - 110.37.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- English III
    - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
        - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
        - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making,

and evaluating the work of the group based on agreed-upon criteria.

- 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.38.c.4.F: make inferences and use evidence to support understanding;
  - 110.38.c.4.G: evaluate details read to understand key ideas;
- 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.38.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
  - 110.38.c.5.F: respond using acquired content and academic vocabulary as appropriate;

- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.39.c.4.F: make inferences and use evidence to support understanding;

        - 110.39.c.4.G: evaluate details read to analyze key ideas;
    - 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
        - 110.39.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
        - 110.39.c.5.F: respond using acquired content and academic vocabulary as appropriate;

Social Studies

- World History Studies
    - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
        - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- World Geography Studies
    - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
        - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- Economics with Emphasis on the Free Enterprise System and Its Benefits
    - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
        - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

Mathematics – No Math TEKS

Science

- Biology:
    - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory,

and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:

- 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
- 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
- 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models

- 112.42.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
  - 112.42.c.2.A: identify advantages and limitations of models such as their size, properties, and materials
  - 112.42.c.2.B: analyze data by identifying significant statistical features, patterns, sources of error, and limitations
  - 112.42.c.2.C: use mathematical calculations to assess quantitative relationships in data
- 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
  - 112.42.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
- 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
  - 112.42.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
  - 112.42.c.4.B: relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and

contributions of diverse scientists as related to the content
- 112.42.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers

- 112.42.c.12: Science concepts--biological structures, functions, and processes. The student knows that multicellular organisms are composed of multiple systems that interact to perform complex functions. The student is expected to:
  - 112.42.c.12.A: analyze the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals
  - 112.42.c.12.B: explain how the interactions that occur among systems that perform functions of transport, reproduction, and response in plants are facilitated by their structures

- Environmental System:
  - 112.50.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.50.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.47.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.50.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
  - 112.50.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
    - 112.50.c.2.A: identify advantages and limitations of models such as their size, properties, and materials

    - 112.50.c.2.B: analyze data by identifying significant statistical features, patterns, sources of error, and limitations
    - 112.50.c.2.C: use mathematical calculations to assess quantitative relationships in data
- 112.50.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.50.c.**3**A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
- 112.50.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.50.c.4A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
    - 112.50.c.4B: relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content
    - 112.50.c.4C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- 112.50.c.9: Science concepts. The student knows that environments change naturally. The student is expected to:
    - 112.50.c.9.C: examine how natural processes such as succession and feedback loops can restore habitats and ecosystems
- 112.50.c.12: Science concepts. The student understands how ethics and economic priorities influence environmental decisions. The student is expected to:
    - 112.50.c.12.E: argue from evidence whether or not a healthy economy and a healthy environment are mutually exclusive
- 112.50.c.13: Science concepts. The student knows how legislation mediates human impacts on the environment. The student is expected to:

- 112.50.c.13.A: describe past and present state and national legislation, including Texas automobile emissions regulations, the National Park Service Act, the Clean Air Act, the Clean Water Act, the Soil and Water Resources Conservation Act, and the Endangered Species Act
- 112.50.c.13.B: evaluate the goals and effectiveness of past and present international agreements such as the environmental Antarctic Treaty System, the Montreal Protocol, the Kyoto Protocol, and the Paris Climate Accord

- Earth Systems Science:
  - 112.49.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.49.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.49.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.49.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
  - 112.49.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
    - 112.49.c.2.A: identify advantages and limitations of models such as their size, properties, and materials
    - 112.49.c.2.B: analyze data by identifying significant statistical features, patterns, sources of error, and limitations
    - 112.49.c.2.C: use mathematical calculations to assess quantitative relationships in data
  - 112.49.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:

    - 112.49.c.**3**.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
- 112.49.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.49.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
    - 112.49.c.4.B: relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content
    - 112.49.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- 112.49.c.6: Science concepts. The student knows the evidence for the formation and composition of Earth's atmosphere, hydrosphere, biosphere, and geosphere. The student is expected to:
    - 112.49.c.6.A: describe how impact accretion, gravitational compression, radioactive decay, and cooling differentiated proto-Earth into layers
    - 112.49.c.6.B: evaluate the roles of volcanic outgassing and water bearing comets in developing Earth's atmosphere and hydrosphere
    - 112.49.c.6.C: evaluate the evidence for changes to the chemical composition of Earth's atmosphere prior to the introduction of oxygen
    - 112.49.c.6.D: evaluate scientific hypotheses for the origin of life through abiotic chemical processes
    - 112.49.c.6.E: describe how the production of oxygen by photosynthesis affected the development of the atmosphere, hydrosphere, geosphere, and biosphere
- 112.49.c.11: Science concepts. The student knows that dynamic and complex interactions among Earth's systems produce climate and weather. The student is expected to:

- 112.49.c.11.A: analyze how energy transfer through Milankovitch cycles, albedo, and differences in atmospheric and surface absorption are mechanisms of climate
- 112.49.c.11.B: describe how Earth's atmosphere is chemically and thermally stratified and how solar radiation interacts with the layers to cause the ozone layer, the jet stream, Hadley and Ferrel cells, and other atmospheric phenomena;
- 112.49.c.11.C: model how greenhouse gases trap thermal energy near Earth's surface

▪ 112.49.c.12: Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:
- 112.49.c.12.A: evaluate the impact on humans of natural changes in Earth's systems such as earthquakes, tsunamis, and volcanic eruptions
- 112.49.c.12.C: analyze the natural and anthropogenic factors that affect the severity and frequency of extreme weather events and the hazards associated with these events

Agriculture, Food, and Natural Resources

○ Principles of Agriculture, Food, and Natural Resources

▪ 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
- 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;

▪ 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
- 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
- 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.

▪ 130.2.c.10: The student develops technical knowledge and skills related to soil systems. The student is expected to:
- 130.2.c.10.a: identify the components and properties of soils;

- 130.2.c.10.b: identify and describe the process of soil formation; and
- 130.2.c.10.c: conduct experiments related to soil chemistry.

- Range Ecology and Management
  - 130.19.c.5: The student analyzes the biotic and abiotic components of a rangeland. The student is expected to:
    - 130.19.c.5.a: discuss components of rangeland with an emphasis on soil;
    - 130.19.c.5.b: determine components of rangeland with an emphasis on topography; and
    - 130.19.c.5.c: classify range sites by soil properties;
- Advances Plant and Soil Science
  - 130.25.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.25.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in plant systems;
  - 130.25.c.6: The student analyzes plant and soil science as it relates to plant and soil relationships affecting the production of food, fiber, and other economic crops. The student is expected to:
    - 130.25.c.6.a: explain the importance and interrelationship of soil and plants; and
  - 130.25.c.7: The student develops scenarios for advances in plant and soil science. The student is expected to:
    - 130.25.c.7.a: design, conduct, and complete research in a laboratory or field investigation to solve problems in plant and soil science;
    - 130.25.c.7.b: use charts, tables, and graphs to prepare written summaries of results and data obtained in a laboratory or field investigation;
    - 130.25.c.7.c: organize, analyze, evaluate, make inferences, and predict trends from data obtained in a laboratory or field investigation; and
    - 130.25.c.7.d: communicate valid outcomes and solutions.
  - 130.25.c.9: The student analyzes soil science as it relates to food and fiber production. The student is expected to:
    - 130.25.c.9.a: explain soil formation;
    - 130.25.c.9.b: evaluate the properties and nature of soils;

- 130.25.c.9.f: practice soil evaluations related to experiential activities such as land judging.

SAY CHEESE FOR PROTEIN

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.36.c.4.F: make inferences and use evidence to support understanding;
  - 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.36.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
    - 110.36.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

        - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
        - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
        - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
    - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
        - 110.37.c.4.F: make inferences and use evidence to support understanding;
    - 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
        - 110.37.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- English III
    - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
        - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
        - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

- 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.38.c.4.F: make inferences and use evidence to support understanding;
- 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.38.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
  - 110.38.c.5.F: respond using acquired content and academic vocabulary as appropriate;

- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.39.c.4.F: make inferences and use evidence to support understanding;
  - 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.39.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
- 110.39.c.5.F: respond using acquired content and academic vocabulary as appropriate;

Social Studies

- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.E: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections between historical events over time;
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.D: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections over time;
    - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:

- 113.31.d.21.A: analyze economic information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, and drawing inferences and conclusions;
- 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

Mathematics – No Math TEKS
Science

- Biology:
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.42.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
  - 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.42.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
    - 112.42.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats

        - 112.42.c.3.C: engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence
    - 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
        - 112.42.c.4.: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
    - 112.42.c.5: Biological Structures, Functions, and Processes: The student knows that biological structures at multiple levels of organization perform specific functions and processes that affect life. The student is expected to:
        - 112.42.c.5.A: relate the functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids, to the structure and function of a cell
- Environmental System:
    - 112.50.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.50.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.47.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
        - 112.50.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
        - 112.50.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems

- 112.50.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
  - 112.50.c.3A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
  - 112.50.c.3B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
  - 112.50.c.3C: engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence
- 112.50.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
  - 112.50.c.4C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- 112.50.c.12: Science concepts. The student understands how ethics and economic priorities influence environmental decisions. The student is expected to:
  - 112.50.c.12.A: evaluate cost-benefit trade-offs of commercial activities such as municipal development, food production, deforestation, over-harvesting, mining, and use of renewable and non-renewable energy sources
  - 112.50.c.12.C: analyze how ethical beliefs influence environmental scientific and engineering practices such as methods for food production, water distribution, energy production, and the extraction of minerals

- Chemistry:
  - 112.43.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:

    - 112.43.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.43.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.43.c.1.F: organize quantitative and qualitative data using oral or written lab reports, labeled drawings, particle diagrams, charts, tables, graphs, journals, summaries, or technology-based reports;
    - 112.43.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
- 112.43.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.43.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
    - 112.43.c.3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
    - 112.43.c.3.C: engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence
- 112.43.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.43.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- 112.43.c.12: Science concepts. The student understands and applies various rules regarding acids and bases. The student is expected to:
    - 112.43.c.12.D: predict products in acid-base reactions that form water

<u>Agriculture, Food, and Natural Resources</u>

- Food Technology and Safety
  - 130.15.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.15.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in food processing;
  - 130.15.c.4: The student analyzes the nutritive value of food constituents. The student is expected to:
    - 130.15.c.4.a: define the terms used in food technology;
  - 130.15.c.11: The student describes the processing, packaging, quality analysis, and marketing of milk and dairy products for distribution. The student is expected to:
    - 130.15.c.11.a: describe methods of preparing milk for processing;
    - 130.15.c.11.b: evaluate methods of processing milk and dairy products;
    - 130.15.c.11.c: identify dairy products, including cultured milk products and frozen dairy desserts; and
    - 130.15.c.11.d: process, classify, and grade cheese.
- Food Processing
  - 130.16.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.16.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in the food processing industry, including the value-added products industry;
  - 130.16.c.4: The student understands consumer satisfaction issues. The student is expected to:
    - 130.16.c.4.a: practice equipment maintenance and sanitation procedures;
    - 130.16.c.4.b: explain the factors that affect food palatability;
  - 130.16.c.5: The student understands quality control issues in food processing. The student is expected to:
    - 130.16.c.5.a: practice procedures relating to the safe manufacture of foods through hygienic food handling and processing;

TEXAS FARM BUREAU®

SILKY GENES

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.36.c.11.A: develop questions for formal and informal inquiry
    - 110.36.c.11.E: locate relevant sources
    - 110.36.c.11.F: synthesize information from a variety of sources
    - 110.36.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.37.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.37.c.11.A: develop questions for formal and informal inquiry;
    - 110.37.c.11.E: locate relevant sources;
    - 110.37.c.11.F: synthesize information from a variety of sources;

        - 110.37.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- English III
    - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
    - 110.38.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
        - 110.38.c.11.A: develop questions for formal and informal inquiry;
        - 110.38.c.11.E: locate relevant sources;
        - 110.38.c.11.F: synthesize information from a variety of sources;
        - 110.38.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- English IV
    - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
    - 110.39.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
        - 110.39.c.11.A: develop questions for formal and informal inquiry;

- 110.39.c.11.E: locate relevant sources;
- 110.39.c.11.F: synthesize information from a variety of sources;
- 110.39.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

Social Studies

- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.E: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections between historical events over time;
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.D: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections over time;
    - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through

established research methodologies from a variety of valid sources, including technology. The student is expected to:

- 113.31.d.21.A: analyze economic information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, and drawing inferences and conclusions;
- 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

Math – No Math TEKS

Science

- Biology:
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.42.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
  - 112.42.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
    - 112.42.c.2.A: identify advantages and limitations of models such as their size, properties, and materials

    - 112.42.c.2.B: analyze data by identifying significant statistical features, patterns, sources of error, and limitations
- 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.42.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
    - 112.42.c. 3.B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
    - 112.42.c.3.C: engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence
- 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.42.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
    - 112.42.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- 112.42.c.7: Mechanisms of Genetics: The student knows the role of nucleic acids in gene expression. The student is expected to:
    - 112.42.c.7.A: identify components of DNA, explain how the nucleotide sequence specifies some traits of an organism, and examine scientific explanations for the origin of DNA
    - 112.42.c.7.B: describe the significance of gene expression and explain the process of protein synthesis using models of DNA and ribonucleic acid (RNA)
    - 112.42.c.7.C: identify and illustrate changes in DNA and evaluate the significance of these changes

- 112.42.c.7.D: discuss the importance of molecular technologies such as polymerase chain reaction (PCR), gel electrophoresis, and genetic engineering that are applicable in current research and engineering practices

Agriculture, Food, and Natural Resources
- Advanced Animal Science
  - 130.10.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.10.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in animal systems;
  - 130.10.c.8: The student applies the principles of molecular genetics and heredity. The student is expected to:
    - 130.10.c.8.d: explain the functions of DNA and RNA;
    - 130.10.c.8.e: describe how heredity is used in the selection of livestock such as knowing the difference between outbreeding and inbreeding/linebreeding; and
    - 130.10.c.8.f: explain how traits are passed from parent to offspring through genetic transfer and the implications of breeding practices.

SOIL AND SUSTAINABILITY

English Language Arts and Reading
- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.36.c.11.F: synthesize information from a variety of sources

        - 110.36.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results
- English II
    - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
    - 110.37.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
        - 110.37.c.11.F: synthesize information from a variety of sources;
        - 110.37.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- English III
    - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
    - 110.38.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
        - 110.38.c.11.F: synthesize information from a variety of sources;
        - 110.38.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- English IV
    - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral

language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
- 110.39.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.39.c.11.F: synthesize information from a variety of sources;
    - 110.39.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

Social Studies
- World History Studies
    - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
        - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- World Geography Studies
    - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
        - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- Economics with Emphasis on the Free Enterprise System and Its Benefits
    - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:

- 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

Mathematics

- Algebra 1
  - 111.39.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
    - 111.39.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
    - 111.39.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
    - 111.39.c.1.E: create and use representations to organize, record, and communicate mathematical ideas;
- Mathematical Models with Applications
  - 111.43.c.9: Mathematical modeling in social sciences. The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences. The student is expected to:
    - 111.43.c.9.A: interpret information from various graphs, including line graphs, bar graphs, circle graphs, histograms, scatterplots, dot plots, stem-and-leaf plots, and box and whisker plots, to draw conclusions from the data and determine the strengths and weaknesses of conclusions;
- Advanced Quantitative Reasoning
  - 111.44.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
    - 111.44.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
    - 111.44.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;

- 111.44.c.1.E: create and use representations to organize, record, and communicate mathematical ideas;

- Statistics
  - 111.47.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
    - 111.47.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
    - 111.47.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
    - 111.47.c.1.C: select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;
    - 111.47.c.1.D: communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;
  - 111.47.c.5: Probability and random variables. The student applies the mathematical process standards to connect probability and statistics. The student is expected to:
    - 111.47.c.5.A: determine probabilities, including the use of a two-way table;

Science

- Biology:
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations

        - 112.42.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
    - 112.42.c.13: Interdependence Within Environmental Systems. The student knows that organisms have an organizational structure and variations can influence survival of populations. The student is expected to:
        - 112.42.c.13.B: analyze how ecosystem stability is affected by disruptions to the cycling of matter and flow of energy through trophic levels using models
        - 112.42.c.13.D: explain how environmental change, including change due to human activity, affects biodiversity and analyze how changes in biodiversity impact ecosystem stability
- Environmental System:
    - 112.50.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.50.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.50.c.5: Science concepts. The student knows the relationships of biotic and abiotic factors within habitats, ecosystems, and biomes. The student is expected to:
        - 112.50.c.5.A: identify native plants and animals within a local ecosystem and compare their roles to those of plants and animals in other biomes, including aquatic, grassland, forest, desert, and tundra
        - 112.50.c.5.C: evaluate the effects of fluctuations in abiotic factors on local ecosystems and local biomes
        - 112.50.c.5.D: measure the concentration of dissolved substances such as dissolved oxygen, chlorides, and nitrates and describe their impacts on an ecosystem
        - 112.50.c.5.E: use models to predict how the introduction of an invasive species may alter the food chain and affect existing populations in an ecosystem

    - 112.50.c.5.F: use models to predict how species extinction may alter the food chain and affect existing populations in an ecosystem
    - 112.50.c.5.G: predict changes that may occur in an ecosystem if genetic diversity is increased or decreased
- 112.50.c.6: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
    - 112.50.c.6.A: compare and contrast land use and management methods and how they affect land attributes such as fertility, productivity, economic value, and ecological stability
    - 112.50.c.6.B: relate how water sources, management, and conservation affect water uses and quality
    - 112.50.c.6.D: identify how changes in limiting resources such as water, food, and energy affect local ecosystems
- 112.50.c.7: Science concepts. The student knows the sources and flow of energy through an environmental system. The student is expected to:
    - 112.50.c.7.D: identify and describe how energy is used, transformed, and conserved as it flows through ecosystems
- 112.50.c.8: Science concepts. The student knows the relationship between carrying capacity and changes in populations and ecosystems. The student is expected to:
    - 112.50.c.8.B: identify factors that may alter carrying capacity such as disease; natural disaster; available food, water, and livable space; habitat fragmentation; and periodic changes in weather;
- 112.50.c.9: Science concepts. The student knows that environments change naturally. The student is expected to:
    - 112.50.c.9.C: examine how natural processes such as succession and feedback loops can restore habitats and ecosystems
- 112.50.c.10: Science concepts. The student knows how humans impact environmental systems through emissions and pollutants. The student is expected to:
    - 112.50.c.10.A: identify sources of emissions in air, soil, and water, including point and nonpoint sources

- 112.50.c.10.B: distinguish how an emission becomes a pollutant based on its concentration, toxicity, reactivity, and location within the environment
- 112.50.b.10.C: investigate the effects of pollutants such as chlorofluorocarbons, greenhouse gases, pesticide runoff, nuclear waste, aerosols, metallic ions, and heavy metals, as well as thermal, light, and noise pollution
- 112.50.b.10.D: evaluate indicators of air, soil, and water quality against regulatory standards to determine the health of an ecosystem
- 112.50.b.10.E: distinguish between the causes and effects of global warming and ozone depletion, including the causes, the chemicals involved, the atmospheric layer, the environmental effects, the human health effects, and the relevant wavelengths on the electromagnetic spectrum (IR and UV)

▪ 112.50.c.11: Science concepts. The student understands how individual and collective actions impact environmental systems. The student is expected to:
- 112.50.c.11.A: evaluate the negative effects of human activities on the environment, including overhunting, overfishing, ecotourism, all-terrain vehicles, and personal watercraft
- 112.50.c.11.B: evaluate the positive effects of human activities on the environment, including habitat restoration projects, species preservation efforts, nature conservancy groups, game and wildlife management, and ecotourism
- 112.50.c.11.C: research the advantages and disadvantages of "going green" such as organic gardening and farming, natural methods of pest control, hydroponics, xeriscaping, energy-efficient homes and appliances, and hybrid cars

▪ 112.50.c.12: Science concepts. The student understands how ethics and economic priorities influence environmental decisions. The student is expected to:
- 112.50.c.12.A: evaluate cost-benefit trade-offs of commercial activities such as municipal development, food production, deforestation, over-harvesting, mining, and use of renewable and non-renewable energy sources

- 112.50.c.12.B: evaluate the economic impacts of individual actions on the environment such as overbuilding, habitat destruction, poaching, and improper waste disposal

- Chemistry:
  - 112.43.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.43.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.43.c.1.B: use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
  - 112.43.c.9: Science concepts. The student understands how matter is accounted for in chemical reactions. The student is expected to:
    - 112.43.c.9.B: differentiate among acid-base reactions, precipitation reactions, and oxidation-reduction reactions

Agriculture, Food, and Natural Resources

- Principles of Agriculture
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
    - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
    - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
  - 130.2.c.10: The student develops technical knowledge and skills related to soil systems. The student is expected to:

- 130.2.c.10.a: identify the components and properties of soils;
- 130.2.c.10.b: identify and describe the process of soil formation; and
- 130.2.c.10.c: conduct experiments related to soil chemistry.

- Range Ecology and Management
  - 130.19.c.5: The student analyzes the biotic and abiotic components of a rangeland. The student is expected to:
    - 130.19.c.5.a: discuss components of rangeland with an emphasis on soil;
    - 130.19.c.5.b: determine components of rangeland with an emphasis on topography; and
- Advances Plant and Soil Science
  - 130.25.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.25.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in plant systems;
  - 130.25.c.6: The student analyzes plant and soil science as it relates to plant and soil relationships affecting the production of food, fiber, and other economic crops. The student is expected to:
    - 130.25.c.6.a: explain the importance and interrelationship of soil and plants; and
  - 130.25.c.7: The student develops scenarios for advances in plant and soil science. The student is expected to:
    - 130.25.c.7.a: design, conduct, and complete research in a laboratory or field investigation to solve problems in plant and soil science;
    - 130.25.c.7.b: use charts, tables, and graphs to prepare written summaries of results and data obtained in a laboratory or field investigation;
    - 130.25.c.7.c: organize, analyze, evaluate, make inferences, and predict trends from data obtained in a laboratory or field investigation; and
    - 130.25.c.7.d: communicate valid outcomes and solutions.
  - 130.25.c.9: The student analyzes soil science as it relates to food and fiber production. The student is expected to:

- 130.25.c.9.a: explain soil formation;
- 130.25.c.9.b: evaluate the properties and nature of soils;

STRAWBERRY BREEDING AND GENETICS

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.36.c.11.F: synthesize information from a variety of sources
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.37.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.37.c.11.F: synthesize information from a variety of sources;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

        - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
    - 110.38.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
        - 110.38.c.11.F: synthesize information from a variety of sources;
- English IV
    - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
        - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
    - 110.39.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
        - 110.39.c.11.F: synthesize information from a variety of sources;

Social Studies

- World History Studies
    - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
        - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- World Geography Studies

        - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
            - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
    - Economics with Emphasis on the Free Enterprise System and Its Benefits
        - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
            - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

Mathematics – No Math TEKS
Science

- Biology:
    - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.42.c.1.D: use appropriate tools such as microscopes, slides, Petri dishes, laboratory glassware, metric rulers, digital balances, pipets, filter paper, micropipettes, gel electrophoresis and polymerase chain reaction (PCR) apparatuses, microcentrifuges, water baths, incubators, thermometers, hot plates, data collection probes, test tube holders, lab notebooks or journals, hand lenses, and models, diagrams, or samples of biological specimens or structures
        - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence

    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.42.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
- 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.42.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theoriesusing applied scientific explanations and empirical evidence
- 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.42.c.4.B: relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content
    - 112.42.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers
- 112.42.c.7: Mechanisms of Genetics: The student knows the role of nucleic acids in gene expression. The student is expected to:
    - 112.42.c.7.A: identify components of DNA, explain how the nucleotide sequence specifies some traits of an organism, and examine scientific explanations for the origin of DNA
    - 112.42.c.7.B: describe the significance of gene expression and explain the process of protein synthesis using models of DNA and ribonucleic acid (RNA)
    - 112.42.c.7.C: identify and illustrate changes in DNA and evaluate the significance of these changes

- 112.42.c.7.D: discuss the importance of molecular technologies such as polymerase chain reaction (PCR), gel electrophoresis, and genetic engineering that are applicable in current research and engineering practices

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;
    - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
  - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
    - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
    - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
  - 130.2.c.11: The student develops technical knowledge and skills related to plant systems. The student is expected to:
    - 130.2.c.11.c: describe plant reproduction, genetics, and breeding;
  - 130.2.c.12: The student develops technical knowledge and skills related to animal systems. The student is expected to:
    - 130.2.c.12.d: explain animal selection, reproduction, breeding, and genetics.
- Advanced Animal Science
  - 130.10.c.8: The student applies the principles of molecular genetics and heredity. The student is expected to:
    - 130.10.c.8.c: identify the parts of the nucleotide and the difference between the nucleotides found in

deoxyribonucleic acid (DNA) versus ribonucleic acid (RNA);
- 130.10.c.8.d: explain the functions of DNA and RNA;
- 130.10.c.8.e: describe how heredity is used in the selection of livestock such as knowing the difference between outbreeding and inbreeding/linebreeding; and

- Advanced Plant and Soil Science
  - 130.25.c.15: The student evaluates components of plant science as they relate to crop production. The student is expected to:
    - 130.25.c.15.a: analyze plant physiology, genetics, and reproduction of various crops;
  - 130.25.c.17: The student diagrams the structure and function of nucleic acids in the mechanism of genetics. The student is expected to:
    - 130.25.c.17.a: describe components of deoxyribonucleic acid (DNA) and illustrate how information for specifying the traits of an organism is carried in DNA;
    - 130.25.c.17.b: identify and illustrate how changes in DNA cause phenotypic or genotypic changes;
    - 130.25.c.17.c: compare and contrast genetic variations observed in plants and animals; and

THE GREEN REVOLUTION

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.36.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
- 110.36.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.37.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
    - 110.37.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making,

and evaluating the work of the group based on agreed-upon criteria.

- 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.38.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
  - 110.38.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.39.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
    - 110.39.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

Social Studies

- United States History Studies Since 1877

- 113.41.d.6: History. The student understands significant events, social issues, and individuals of the 1920s. The student is expected to:
  - 113.41.d.6.B: analyze the impact of significant individuals such as Henry Ford, Marcus Garvey, and Charles A. Lindbergh.
- 113.41.d.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
  - 113.41.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

- World History Studies
  - 113.42.d.27: Science, technology, and society. The student understands how major scientific and mathematical discoveries and technological innovations have affected societies from 1750 to the present. The student is expected to:
    - 113.42.d.27.E: identify the contributions of significant scientists and inventors such as Marie Curie, Thomas Edison, Albert Einstein, Louis Pasteur, and James Watt.
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.E: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections between historical events over time;
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
  - 113.42.c.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
    - 113.42.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list

and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.D: analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, drawing inferences and conclusions, and developing connections over time;
    - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.31.d.21.A: analyze economic information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, and drawing inferences and conclusions;
    - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
  - 113.31.d.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
- Ethnic Studies: African American Studies
  - 113.51.d.16: Science, technology, and society. The student understands how African American achievements in science and

technology have contributed to economic and social development in the United States. The student is expected to:

- 113.51.d.16.C: describe the contributions of significant African American individuals to science, philosophy, mathematics, and technology such as Benjamin Banneker, George Washington Carver, Granville Woods, Mary Jackson, Katherine Johnson, Henrietta Lacks, Dorothy Vaughan, Mae Jemison, and Neil deGrasse Tyson;

Mathematics – No Math TEKS

Science

- Biology:
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
  - 112.42.c.7: Mechanisms of Genetics: The student knows the role of nucleic acids in gene expression. The student is expected to:
    - 112.42.c.7.A: identify components of DNA, explain how the nucleotide sequence specifies some traits of an organism, and examine scientific explanations for the origin of DNA
    - 112.42.c.7.B: describe the significance of gene expression and explain the process of protein synthesis using models of DNA and ribonucleic acid (RNA)
    - 112.42.c.7.C: identify and illustrate changes in DNA and evaluate the significance of these changes

        - 112.42.c.7.D: discuss the importance of molecular technologies such as polymerase chain reaction (PCR), gel electrophoresis, and genetic engineering that are applicable in current research and engineering practices
    - 112.42.c.13: Interdependence Within Environmental Systems. The student knows that organisms have an organizational structure and variations can influence survival of populations. The student is expected to:
        - 112.42.c.13.D: explain how environmental change, including change due to human activity, affects biodiversity and analyze how changes in biodiversity impact ecosystem stability
- Aquatic Science:
    - 112.47.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.47.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.47.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
        - 112.47.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.47.c.14: Science concepts. The student understands how human activities impact aquatic environments. The student is expected to:
        - 112.47.c.14.A: analyze the cumulative impact of human population growth on an aquatic ecosystem
        - 112.47.c.14.B: predict effects of chemical, organic, physical, and thermal changes due to humans on the living and nonliving components of an aquatic ecosystem
        - 112.47.c.14.C: investigate the role of humans in unbalanced systems involving phenomena such as invasive species, fish farming, cultural eutrophication, or red tides

- 112.47.c.14.D: analyze and discuss how human activities such as fishing, transportation, dams, and recreation influence aquatic environments
- 112.47.c.14.E: describe the impact such as costs and benefits of various laws and policies such as The Endangered Species Act, right of capture laws, or Clean Water Act on aquatic systems
- 112.47.c.14.F: analyze the purpose and effectiveness of human efforts to restore aquatic ecosystems affected by human activities

- Environmental System:
  - 112.50.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.50.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.47.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.50.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
  - 112.50.c.6: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
    - 112.50.c.6.A: compare and contrast land use and management methods and how they affect land attributes such as fertility, productivity, economic value, and ecological stability
    - 112.50.c.6.B: relate how water sources, management, and conservation affect water uses and quality
    - 112.50.c.6.F: evaluate the impact of waste management methods such as reduction, reuse, recycling, upcycling, and composting on resource availability in the local environment

- 112.50.c.8: Science concepts. The student knows the relationship between carrying capacity and changes in populations and ecosystems. The student is expected to:
  - 112.50.c.8.D: analyze and make predictions about the impact on populations of geographic locales due to diseases, birth and death rates, urbanization, and natural events such as migration and seasonal changes
- 112.50.c.11: Science concepts. The student understands how individual and collective actions impact environmental systems. The student is expected to:
  - 112.50.c.11.A: evaluate the negative effects of human activities on the environment, including overhunting, overfishing, ecotourism, all-terrain vehicles, and personal watercraft
  - 112.50.c.11.B: evaluate the positive effects of human activities on the environment, including habitat restoration projects, species preservation efforts, nature conservancy groups, game and wildlife management, and ecotourism
  - 112.50.c.11.C: research the advantages and disadvantages of "going green" such as organic gardening and farming, natural methods of pest control, hydroponics, xeriscaping, energy-efficient homes and appliances, and hybrid cars
- 112.50.c.12: Science concepts. The student understands how ethics and economic priorities influence environmental decisions. The student is expected to:
  - 112.50.c.12.A: evaluate cost-benefit trade-offs of commercial activities such as municipal development, food production, deforestation, over-harvesting, mining, and use of renewable and non-renewable energy sources
  - 112.50.c.12.C: analyze how ethical beliefs influence environmental scientific and engineering practices such as methods for food production, water distribution, energy production, and the extraction of minerals
- 112.50.c.13: Science concepts. The student knows how legislation mediates human impacts on the environment. The student is expected to:
  - 112.50.c.13.A: describe past and present state and national legislation, including Texas automobile emissions

regulations, the National Park Service Act, the Clean Air Act, the Clean Water Act, the Soil and Water Resources Conservation Act, and the Endangered Species Act

- Earth Systems Science:
  - 112.49.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.49.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.49.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.49.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
  - 112.49.c.9: Science concepts. The student knows that the lithosphere continuously changes as a result of dynamic and complex interactions among Earth's systems. The student is expected to:
    - 112.49.c.9.B: investigate and model how surface water and ground water change the lithosphere through chemical and physical weathering and how they serve as valuable natural resources
  - 112.49.c.12: Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:
    - 112.49.c.12.D: analyze recent global ocean temperature data to predict the consequences of changing ocean temperature on evaporation, sea level, algal growth, coral bleaching, and biodiversity
    - 112.49.c.12.E: predict how human use of Texas's naturally occurring resources such as fossil fuels, minerals, soil, solar energy, and wind energy directly and indirectly changes the cycling of matter and energy through Earth's systems

- 112.49.c.12.F: explain the cycling of carbon through different forms among Earth's systems and how biological processes have caused major changes to the carbon cycle in those systems over Earth's history

- 112.49.c.13: Science concepts. The student explores global policies and careers related to the life cycles of Earth's resources. The student is expected to:
  - 112.49.c.13.A: analyze the policies related to resources from discovery to disposal, including economics, health, technological advances, resource type, concentration and location, waste disposal and recycling, mitigation efforts, and environmental impacts

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;
    - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
    - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
    - 130.2.c.4.d: identify potential future scenarios for agriculture, food, and natural resources systems, including global impacts;
    - 130.2.c.4.e: describe how emerging technologies and globalization impacts agriculture, food, and natural resources; and
    - 130.2.c.4.f: compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment,

        - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
            - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
            - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
        - 130.2.c.7: The student applies appropriate research methods to agriculture, food, and natural resources topics. The student is expected to:
            - 130.2.c.7.a: discuss major research and developments in the fields of agriculture, food, and natural resources;
    - Advanced Plant and Soil Science
        - 130.25.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
            - 130.25.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in plant systems;
        - 130.25.c.6: The student analyzes plant and soil science as it relates to plant and soil relationships affecting the production of food, fiber, and other economic crops. The student is expected to:
            - 130.25.c.6.a: explain the importance and interrelationship of soil and plants; and
        - 130.25.c.18: The student demonstrates skills related to the human, scientific, and technological dimensions of crop production and the resources necessary for producing domesticated plants. The student is expected to:
            - 130.25.c.18.a: describe the growth and development of major crops;
            - 130.25.c.18.b: apply principles of genetics and plant breeding;
            - 130.25.c.18.c: examine the development of crop varieties through the origin of agriculture; and

The Science of GMOs

English Language Arts and Reading

- English I

        - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
            - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
            - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
        - 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
            - 110.36.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
            - 110.36.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
    - English II
        - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
            - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
            - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
        - 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
            - 110.37.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;

- 110.37.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.38.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
    - 110.38.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating

a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

- 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.39.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
  - 110.39.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

Social Studies

- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- World Geography Studies
  - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
    - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

TEXAS FARM BUREAU®

Mathematics – No Math TEKS
Science

- Biology:
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
  - 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.42.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
    - 112.42.c.3..B: communicate explanations and solutions individually and collaboratively in a variety of settings and formats
    - 112.42.c.3.C: engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence
  - 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.42.c.4.C: research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers

- 112.42.c.7: Mechanisms of Genetics: The student knows the role of nucleic acids in gene expression. The student is expected to:
    - 112.42.c.7.A: identify components of DNA, explain how the nucleotide sequence specifies some traits of an organism, and examine scientific explanations for the origin of DNA
    - 112.42.c.7.B: describe the significance of gene expression and explain the process of protein synthesis using models of DNA and ribonucleic acid (RNA)
    - 112.42.c.7.C: identify and illustrate changes in DNA and evaluate the significance of these changes
    - 112.42.c.7.D: discuss the importance of molecular technologies such as polymerase chain reaction (PCR), gel electrophoresis, and genetic engineering that are applicable in current research and engineering practices
- 112.42.c.8: Mechanisms of Genetics: The student knows the role of nucleic acids and the principles of inheritance and variation of traits in Mendelian and non-Mendelian genetics. The student is expected to:
    - 112.42.c.8.A: analyze the significance of chromosome reduction, independent assortment, and crossing over during meiosis in increasing diversity in populations of organisms that reproduce sexually
- 112.42.c.10: Biological Evolution. The student knows evolutionary theory is a scientific explanation for the unity and diversity of life that has multiple mechanisms. The student is expected to:
    - 112.42.c.10.A: analyze and evaluate how natural selection produces change in populations and not in individuals
    - 112.42.c.10.B: analyze and evaluate how the elements of natural selection, including inherited variation, the potential of a population to produce more offspring than can survive, and a finite supply of environmental resources, result in differential reproductive success
    - 112.42.c.10.C: analyze and evaluate how natural selection may lead to speciation
    - 112.42.c.10.D: analyze evolutionary mechanisms other than natural selection, including genetic drift, gene flow,

mutation, and genetic recombination, and their effect on the gene pool of a population

- 112.42.c.11: Biological Structures, Functions, and Processes. Science concepts--biological structures, functions, and processes. The student knows the significance of matter cycling, energy flow, and enzymes in living organisms. The student is expected to:
  - 112.42.c.11.A: explain how matter is conserved and energy is transferred during photosynthesis and cellular respiration using models, including the chemical equations for these processes
- 112.42.c.13: Interdependence Within Environmental Systems. The student knows that organisms have an organizational structure and variations can influence survival of populations. The student is expected to:
  - 112.42.c.13.D: explain how environmental change, including change due to human activity, affects biodiversity and analyze how changes in biodiversity impact ecosystem stability

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;
    - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
    - 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
    - 130.2.c.4.d: identify potential future scenarios for agriculture, food, and natural resources systems, including global impacts;

- 130.2.c.4.e: describe how emerging technologies and globalization impacts agriculture, food, and natural resources; and
- 130.2.c.4.f: compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment,

- 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
  - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
  - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
- 130.2.c.7: The student applies appropriate research methods to agriculture, food, and natural resources topics. The student is expected to:
  - 130.2.c.7.a: discuss major research and developments in the fields of agriculture, food, and natural resources;
- 130.2.c.11: The student develops technical knowledge and skills related to plant systems. The student is expected to:
  - 130.2.c.11.c: describe plant reproduction, genetics, and breeding;
  - 130.2.c.11.d: identify plants of importance to agriculture, food, and natural resources; and
  - 130.2.c.11.e: use tools, equipment, and personal protective equipment common to plant systems.

TRACING THE AGRICULTURAL SUPPLY CHAIN

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information,

developing a plan for consensus building, and setting ground rules for decision making.

- 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.36.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
  - 110.36.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.37.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
    - 110.37.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
- 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

▪ 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.38.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
- 110.38.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

○ <u>English IV</u>

▪ 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
- 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

▪ 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:

- 110.39.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
- 110.39.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

Social Studies

- Economics with Emphasis on the Free Enterprise System and Its Benefits
  - 113.31.d.22: Social studies skills. The student communicates in written, oral, and visual forms. The student is expected to:
    - 113.31.d.22.A: use social studies terminology correctly;
- United States History Since 1877
  - 113.41.d.26: Science, technology, and society. The student understands the impact of science, technology, and the free enterprise system on the economic development of the United States. The student is expected to:
    - 113.41.d.26.C: describe the effect of technological innovations in the workplace such as assembly line manufacturing and robotics.
  - 113.41.d.29: Social studies skills. The student communicates in written, oral, and visual forms. The student is expected to:
    - 113.41.d.29.B: use social studies terminology correctly;
- World History Studies
  - 113.42.d.27: Science, technology, and society. The student understands how major scientific and mathematical discoveries and technological innovations have affected societies from 1750 to the present. The student is expected to:
    - 113.42.d.27.D: explain the role of telecommunication technology, computer technology, transportation technology, and medical advancements in developing the modern global economy and society;
  - 113.42.d.30: Social studies skills. The student communicates in written, oral, and visual forms. The student is expected to:
    - 113.42.d.30.A: use social studies terminology correctly;
- World Geography Studies
  - 113.43.d.22: Social studies skills. The student communicates in written, oral, and visual forms. The student is expected to:
    - 113.43.d.22.C: use social studies terminology correctly;

TEXAS FARM BUREAU®

Mathematics – No Math TEKS

Science

- Environmental System:
  - 112.50.c.12: Science concepts. The student understands how ethics and economic priorities influence environmental decisions. The student is expected to:
    - 112.50.c.12.A: evaluate cost-benefit trade-offs of commercial activities such as municipal development, food production, deforestation, over-harvesting, mining, and use of renewable and non-renewable energy sources
    - 112.50.c.12.B: evaluate the economic impacts of individual actions on the environment such as overbuilding, habitat destruction, poaching, and improper waste disposal
    - 112.50.c.12.C: analyze how ethical beliefs influence environmental scientific and engineering practices such as methods for food production, water distribution, energy production, and the extraction of minerals

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.a: identify career development, education, and entrepreneurship opportunities in the field of agriculture, food, and natural resources;
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
  - 130.2.c.3: The student analyzes concepts related to global diversity. The student is expected to:
    - 130.2.c.3.b: evaluate marketing factors and practices that impact the global markets.
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;

- 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
- 130.2.c.4.c: evaluate significant historical and current agriculture, food, and natural resources developments;
- 130.2.c.4.d: identify potential future scenarios for agriculture, food, and natural resources systems, including global impacts;
- 130.2.c.4.e: describe how emerging technologies and globalization impacts agriculture, food, and natural resources; and
- 130.2.c.4.f: compare and contrast issues impacting agriculture, food, and natural resources such as biotechnology, employment, safety, environment,

▪ 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
- 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
- 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.

▪ 130.2.c.13: The student describes the principles of food products and processing
- 130.2.c.13.a: evaluate food products and processing systems;
- 130.2.c.13.b: determine trends in world food production;
- 130.2.c.13.c: discuss current issues in food production; and

○ <u>Agribusiness Management and Marketing</u>

▪ 130.4.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
- 130.4.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in agribusiness systems;

▪ 130.4.c.3: The student recognizes roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment. The student is expected to:
- 130.4.c.3.a: identify how key organizational systems affect organizational performance and the quality of

products and services related to agriculture, food, and natural resources;
- 130.4.c.3.b: demonstrate an understanding of the global context of agricultural industries and careers; and

- Food Technology and Safety
  - 130.15.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.15.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in food processing;
  - 130.15.c.3: The student explains the impact of food science systems. The student is expected to:
    - 130.15.c.3.a: explain the significance of food science systems;
    - 130.15.c.3.b: define trends in food production, world population, and supply and demand for food products;
  - 130.15.c.7: The student demonstrates an understanding of the trends and issues important to careers in the food science industry by comparing and contrasting issues affecting the food science industry, including biotechnology, employment, safety, environmental, and animal welfare issues. The student is expected to:
    - 130.15.c.7.b: identify issues affecting food science;
    - 130.15.c.7.e: apply economic principles such as supply, demand, and profit to food science systems.
- Food Processing
  - 130.16.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.16.c.1.b: apply competencies related to resources, information, interpersonal skills, and systems of operation in the food processing industry, including the value-added products industry;
  - 130.16.c.3: The student knows the relationship of the food processing industry to the free enterprise system. The student is expected to:
    - 130.16.c.3.a: explain the importance of the food processing industry in the free enterprise system; and

- 130.16.c.3.b: explain trends in the consumption of food products.

WHAT'S YOUR PH?

English Language Arts and Reading

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.36.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
    - 110.36.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.

        - 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
            - 110.37.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
            - 110.37.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
    - English III
        - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
            - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
            - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
        - 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
            - 110.38.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
            - 110.38.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
    - English IV
        - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:

- 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
- 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.

▪ 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
- 110.39.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
- 110.39.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;

Social Studies

- United States History Studies Since 1877
  - 113.41.d.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
    - 113.41.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
- World History Studies
  - 113.42.d.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.42.d.28.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.

        - 113.42.c.31: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:
            - 113.42.d.31.B: use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
    - World Geography Studies
        - 113.43.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
            - 113.43.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
    - Economics with Emphasis on the Free Enterprise System and Its Benefits
        - 113.31.d.21: Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including technology. The student is expected to:
            - 113.31.d.21.F: formulate and communicate visually, orally, or in writing a claim supported by evidence and reasoning for an intended audience and purpose.
        - 113.31.d.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

Mathematics

- Mathematical Models with Applications
    - 111.43.c.9: Mathematical modeling in social sciences. The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences. The student is expected to:
        - 111.43.c.9.A: interpret information from various graphs, including line graphs, bar graphs, circle graphs, histograms, scatterplots, dot plots, stem-and-leaf plots,

and box and whisker plots, to draw conclusions from the data and determine the strengths and weaknesses of conclusions;

Science

- Biology:
  - 112.42.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.42.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.42.c.1.D: use appropriate tools such as microscopes, slides, Petri dishes, laboratory glassware, metric rulers, digital balances, pipets, filter paper, micropipettes, gel electrophoresis and polymerase chain reaction (PCR) apparatuses, microcentrifuges, water baths, incubators, thermometers, hot plates, data collection probes, test tube holders, lab notebooks or journals, hand lenses, and models, diagrams, or samples of biological specimens or structures
    - 112.42.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.42.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.42.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
  - 112.42.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.42.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories

- 112.42.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
  - 112.42.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
- 112.42.c.12: Science concepts--biological structures, functions, and processes. The student knows that multicellular organisms are composed of multiple systems that interact to perform complex functions. The student is expected to:
  - 112.42.c.12.B: explain how the interactions that occur among systems that perform functions of transport, reproduction, and response in plants are facilitated by their structures
- 112.42.c.13: Interdependence Within Environmental Systems. The student knows that organisms have an organizational structure and variations can influence survival of populations. The student is expected to:
  - 112.42.c.13.A: investigate and evaluate how ecological relationships, including predation, parasitism, commensalism, mutualism, and competition, influence ecosystem stability
  - 112.42.c.13.B: analyze how ecosystem stability is affected by disruptions to the cycling of matter and flow of energy through trophic levels using models
  - 112.42.c.13.C: explain the significance of the carbon and nitrogen cycles to ecosystem stability and analyze the consequences of disrupting these cycles

- Aquatic Science:
  - 112.47.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.47.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations

- 112.47.c.1.D: use appropriate tools such as Global Positioning System (GPS), Geographic Information System (GIS), weather balloons, buoys, water testing kits, meter sticks, metric rulers, pipettes, graduated cylinders, standard laboratory glassware, balances, timing devices, pH meters or probes, various data collecting probes, thermometers, calculators, computers, internet access, turbidity testing devices, hand magnifiers, work and disposable gloves, compasses, first aid kits, field guides, water quality test kits or probes, 30-meter tape measures, tarps, ripple tanks, trowels, screens, buckets, sediment samples equipment, cameras, flow meters, cast nets, kick nets, seines, computer models, spectrophotometers, stereomicroscopes, compound microscopes, clinometers, and field journals, various prepared slides, hand lenses, hot plates, Petri dishes, sampling nets, waders, leveling grade rods (Jason sticks), protractors, inclination and height distance calculators, samples of biological specimens or structures, core sampling equipment, fish tanks and associated supplies, and hydrometers; 112.47.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
- 112.47.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
- 112.47.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems

- 112.47.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
  - 112.47.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
  - 112.47.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:

        - 112.47.c.3.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
    - 112.47.c.7: Science Concept: The student knows about the interdependence and interactions that occur in aquatic environments. The student is expected to:
        - 112.47.c.7.C: identify variables that affect the solubility of carbon dioxide and oxygen in water

    - 112.47.c.8: Science concepts. The student conducts shortterm and long-term studies on local aquatic environments. Local natural environments are to be preferred over artificial or virtual environments. The student is expected to:
        - 112.47.c.8.B: collect and analyze pH, salinity, temperature, mineral content, nitrogen compounds, dissolved oxygen, and turbidity data periodically, starting with baseline measurements
    - 112.47.c.14: Science concepts. The student understands how human activities impact aquatic environments. The student is expected to:
        - 112.47.c.14.A: analyze the cumulative impact of human population growth on an aquatic ecosystem
        - 112.47.c.14.B: predict effects of chemical, organic, physical, and thermal changes due to humans on the living and nonliving components of an aquatic ecosystem
- <u>Environmental System:</u>
    - 112.50.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.50.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.50.c.1.D: use appropriate tools such as meter sticks, metric rulers, pipettes, graduated cylinders, standard laboratory glassware, balances, timing devices, pH

meters or probes, various data collecting probes, thermometers, calculators, computers, internet access, turbidity testing devices, hand magnifiers, work and disposable gloves, compasses, first aid kits, binoculars, field guides, water quality test kits or probes, soil test kits or probes, 30 meter tape measures, tarps, shovels, trowels, screens, buckets, rock and mineral samples equipment, air quality testing devices, cameras, flow meters, Global Positioning System (GPS) units, Geographic Information System (GIS) software, computer models, densiometers, spectrophotometers, stereomicroscopes, compound microscopes, clinometers, field journals, various prepared slides, hand lenses, hot plates, Petri dishes, sampling nets, waders, leveling grade rods (Jason sticks), protractors, inclination and height distance calculators, samples of biological specimens or structures, core sampling equipment, and kick nets

- 112.50.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence

- 112.50.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
- 112.50.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems

- 112.50.c.2: Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
  - 112.50.c.2.D: evaluate experimental and engineering designs
- 112.50.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:

    - 112.50.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
- 112.50.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.50.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
- 112.50.c.5: Science concepts. The student knows the relationships of biotic and abiotic factors within habitats, ecosystems, and biomes. The student is expected to:
    - 112.50.c.5.A: identify native plants and animals within a local ecosystem and compare their roles to those of plants and animals in other biomes, including aquatic, grassland, forest, desert, and tundra
    - 112.50.c.5.B: explain the cycling of water, phosphorus, carbon, silicon, and nitrogen through ecosystems, including sinks, and the human interactions that alter these cycles using tools such as models
    - 112.50.c.5.C: evaluate the effects of fluctuations in abiotic factors on local ecosystems and local biomes
    - 112.50.c.5.D: measure the concentration of dissolved substances such as dissolved oxygen, chlorides, and nitrates and describe their impacts on an ecosystem
    - 112.50.c.5.G: predict changes that may occur in an ecosystem if genetic diversity is increased or decreased
- 112.50.c.6: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
    - 112.50.c.6.B: relate how water sources, management, and conservation affect water uses and quality
    - 112.50.c.6.C: document the use and conservation of both renewable and non-renewable resources as they pertain to sustainability
- 112.50.c.8: Science concepts. The student knows the relationship between carrying capacity and changes in populations and ecosystems. The student is expected to:

        - 112.50.c.8.A: compare exponential and logistical population
        - 112.50.c.8.D: analyze and make predictions about the impact on populations of geographic locales due to diseases, birth and death rates, urbanization, and natural events such as migration and seasonal changes
    - 112.50.c.11: Science concepts. The student understands how individual and collective actions impact environmental systems. The student is expected to:
        - 112.50.c.11.B: evaluate the positive effects of human activities on the environment, including habitat restoration projects, species preservation efforts, nature conservancy groups, game and wildlife management, and ecotourism
        - 112.50.c.11.C: research the advantages and disadvantages of "going green" such as organic gardening and farming, natural methods of pest control, hydroponics, xeriscaping, energy-efficient homes and appliances, and hybrid cars
    - 112.50.c.12: Science concepts. The student understands how ethics and economic priorities influence environmental decisions. The student is expected to:
        - 112.50.c.12.D: discuss the impact of research and technology on social ethics and legal practices in situations such as the design of new buildings, recycling, or emission standards
- <u>Earth Systems Science:</u>
    - 112.49.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
        - 112.49.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
        - 112.49.c.1.D: use appropriate tools such as a drawing compass, magnetic compass, bar magnets, topographical and geological maps, satellite imagery and other remote sensing data, Geographic Information Systems (GIS),

Global Positioning System (GPS), hand lenses, and fossil and rock sample kits;
    - 112.49.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.49.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.49.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
- 112.49.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.49.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
- 112.49.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.49.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student
- 112.49.c.12: Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:
    - 112.49.c.12.F: explain the cycling of carbon through different forms among Earth's systems and how biological processes have caused major changes to the carbon cycle in those systems over Earth's history
- 112.49.c.13: Science concepts. The student explores global policies and careers related to the life cycles of Earth's resources. The student is expected to:
    - 112.49.c.13.A: analyze the policies related to resources from discovery to disposal, including economics, health, technological advances, resource type, concentration and

location, waste disposal and recycling, mitigation efforts, and environmental impacts

- Chemistry:
  - 112.43.c.1: Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    - 112.43.c.1.A: ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    - 112.43.c.1.D: use appropriate tools such as Safety Data Sheets (SDS), scientific or graphing calculators, computers and probes, electronic balances, an adequate supply of consumable chemicals, and sufficient scientific glassware such as beakers, Erlenmeyer flasks, pipettes, graduated cylinders, volumetric flasks, and burettes
    - 112.43.c.1.E: collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    - 112.43.c.1.F: organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models
    - 112.43.c.1.G: develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
  - 112.43.c.3: The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    - 112.43.c.3.A: develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
  - 112.43.c.4: Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    - 112.43.c.4.A: analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence,

logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student

- 112.43.c.12: Science concepts. The student understands and applies various rules regarding acids and bases. The student is expected to:
  - 112.43.c.12.D: predict products in acid-base reactions that form water
  - 112.43.c.12.E: define pH and calculate the pH of a solution using the hydrogen ion concentration

Agriculture, Food, and Natural Resources

- Principles of Agriculture, Food, and Natural Resources
  - 130.2.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
    - 130.2.c.1.b: apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in agriculture, food, and natural resources;
    - 130.2.c.1.e: identify careers in agriculture, food, and natural resources with required aptitudes in science, technology, engineering, mathematics, language arts, and social studies.
  - 130.2.c.4: The student explains the historical, current, and future significance of the agriculture, food, and natural resources industry. The student is expected to:
    - 130.2.c.4.a: define the scope of agriculture;
    - 130.2.c.4.b: analyze the scope of agriculture, food, and natural resources and its effect upon society;
  - 130.2.c.6: The student demonstrates appropriate personal and communication skills. The student is expected to:
    - 130.2.c.6.a: demonstrate written and oral communication skills appropriate for formal and informal situations such as prepared and extemporaneous presentations; and
    - 130.2.c.6.b: demonstrate effective listening skills appropriate for formal and informal situations.
  - 130.2.c.10: The student develops technical knowledge and skills related to soil systems. The student is expected to:
    - 130.2.c.10.a: identify the components and properties of soils;

        - 130.2.c.10.c: conduct experiments related to soil chemistry.
- Advanced Plant and Soil Science
    - 130.25.c.1: The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
        - 130.25.c.1.a: identify career development and entrepreneurship opportunities in the field of plant systems;
        - 130.25.c.1.b:apply competencies related to resources, information, interpersonal skills, and systems of operation in plant systems;
    - 130.25.c.3: The student uses scientific methods and equipment during laboratory and field investigations. The student is expected to:
        - 130.25.c.3.f: collect and organize qualitative and quantitative data and make measurements with accuracy and precision using tools such as calculators, spreadsheet software, data-collecting probes, computers, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, electronic balances, analysis kits, sieve sets, sieve shakers, soil augers, soil moisture meters, hand lenses, Celsius thermometers, lab notebooks or journals, timing devices, cameras, Petri dishes, lab incubators, dissection equipment, meter sticks, and models, diagrams, or samples of biological specimens or structures;
        - 130.25.c.3.g: analyze, evaluate, make inferences, and predict trends from data; and
        - 130.25.c.3.h: communicate valid conclusions supported by the data through methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.
    - 130.25.c.6: The student analyzes plant and soil science as it relates to plant and soil relationships affecting the production of food, fiber, and other economic crops. The student is expected to:
        - 130.25.c.6.a: explain the importance and interrelationship of soil and plants; and

    - 130.25.c.6.b: practice soil and plant evaluation as it applies to agricultural and urban settings.
- 130.25.c.7: The student develops scenarios for advances in plant and soil science. The student is expected to:
    - 130.25.c.7.a: design, conduct, and complete research in a laboratory or field investigation to solve problems in plant and soil science;
    - 130.25.c.7.b: use charts, tables, and graphs to prepare written summaries of results and data obtained in a laboratory or field investigation;
    - 130.25.c.7.c: organize, analyze, evaluate, make inferences, and predict trends from data obtained in a laboratory or field investigation; and
    - 130.25.c.7.d: communicate valid outcomes and solutions.
- 130.25.c.9: The student analyzes soil science as it relates to food and fiber production. The student is expected to:
    - 130.25.c.9.a: explain soil formation;
    - 130.25.c.9.b: evaluate the properties and nature of soils;