Strand	
Big Idea	**Unit 1: Introduction to Agriculture, Food and Natural Resources (AFNR)**

Standard	**Learning Targets**
A. Acquire knowledge necessary for success in the AFNR Academy including an understanding of the industry and its impact on society	1. • Define agriculture, natural resources, and know how it relates to food production • Understand the impact of AFNR on society • Explain how our academy functions and the steps necessary for graduation

Alignments:
CCSS: 9-10.SL.4; 9-10.WHST.5
Performance: 4.5
Knowledge: (SC) 8
NACS: SS.4d
NETS: 1a
DOK: 4

Instructional Strategies

- Students will use iPads on a daily basis including using Edmodo as an instructional platform
- Classroom discussions:
  - Intro to Ag, Food, Natural Resource and process of academy
  - Intro to pathways
  - Explanation of projects and pathway to graduation (i.e., stepping stones)
  - Effects of AFNR on society
- Team building activities
- Posters on definition of agriculture, natural resources, etc.
- Watch a video: Importance of Agriculture
- Guest speakers:
  - Principal of the Academy – speak about academy structure
  - Business leaders in AFNR – speak about AFNRs effect on society (specific guests to be determined based on availability)
- Make a Public Service Announcement (PSA) on the impact of AFNR on society (see scoring guide)
- Field trip: Bradford Farms to learn what traditional and non-traditional agriculture are in a hands-on manner

Assessments/Evaluations

- Formative
  - Activities identifying agricultural and natural resource commodities in Missouri
  - Quiz over the structure of the Academy
- Summative:
  - Create a PSA explaining AFNRs effect on society – assessed using a scoring guide

Sample Assessment Questions

- Define the following terms: agriculture, natural resource, commodity.
- How many pathways are there in AFNR? What are they?

Instructional Resources/Tools

- CASE curriculum (for reference)
- Video: World Population in Agriculture: Seeking a Balance for Survival

Literacy Connections

- Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task
- Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience

Cross Curricular Connections

- ELA:
  - Research
  - Speaking/presentation
- Science: Obtaining, evaluating and communicating information (NGSS)

Strand	
Big Idea	**Unit 2: Leadership in Agriculture, Food and Natural Resources**

Standard

B. Recognize and implement character traits needed in order to positively influence others

Learning Targets

1.

- Demonstrate effective public speaking and communication skills
- Develop an awareness of opportunities in agriculture education, including the requirements and benefits associated with the FFA, and how it is valuable to the school and community

Alignments:
CCSS: 9-10.SL.1; 9-10.SL.4; 9-10.WHST.2; 9-10.WHST.4; 9-10.WHST.5
Performance: 1.5
Knowledge: (CA) 1,6
ASIINS: CS.01
NACS: ELA.4; ELA.12
NETS: 2b; 4c
DOK: 4

Instructional Strategies

- Students will use iPads on a daily basis including using Edmodo as an instructional platform
- Brainstorm what effective communication and speaking looks like. Develop a list of presentation skills together
- Student:
  - presentation of FFA:
    - and leadership opportunities
    - creed, focusing on good presentation skills
  - participation in FFA meeting (large group)

Assessments/Evaluations

- Formative:
  - Practice presentation to peers
  - Reflection sheets from leadership activities
- Summative:
  - Leadership Portfolio may include the following – FFA:
    - basics
    - history
    - chapter operation
    - opportunities
    - decision-making
    - listening skills
    - goal setting
  - Student presentation of creed (see scoring guide developed in conjunction with students)

Sample Assessment Questions

- Scoring guides will be based on what students develop, but might include the following:
  - Good transitions, such as:
    - walking up
    - getting peoples' attention
    - asking for questions at the end
  - Speak clearly and at the necessary volume (not too loud, not too soft)
  - Good eye contact and always faces the audience
  - No fillers like "um" or "like" or "and"
  - No visible food, drink or gum
  - All group members participate equally
  - Props and/or technology are used to enhance presentation
  - Presentation is well organized (has a beginning, middle and end)
  - Preparedness (evidence of practice, everyone know all the vocabulary and concepts in presentation)
  - Professional (no laughing, giggling, etc.)

Instructional Resources/Tools

- National provided FFA curriculum
- FFA website

Literacy Connections

- Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively
- Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task
- Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes
- Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience
- Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience

Cross Curricular Connections

- ELA:
  - Research
  - Speaking/presentation
- Science: Obtaining, evaluating and communicating information (NGSS)

Strand	
Big Idea	**Unit 3: Production**

Standard	**Learning Targets**
C. Understand the production and management of plants and animals in agriculture	1. • Classify and identify plants and animals in order to produce and manage them effectively • Explain the life cycle and the effect of environmental factors, nutrients, and soil on plant growth • Evaluate animal nutrition and reproduction techniques in order to produce healthy animals • Identify possible ways that plants and animals benefit and/or harm the environment

Alignments:
CCSS: 11-12.SL.5; 9-10.RST.9; 9-10.WHST.6; 9-10.WHST.7; 9-10.WHST.8; N-Q.1
Performance: 1.4, 2.1, 3.7
Knowledge: (CA) 6 (SC) 4,8
SCCLE: SC3.2.A.D (Biology 1), SC3.3.A-E (Biology 1), SC4.1.D
NACS: SC.3; SC.5; SC.6
NAFNRS: PS.01.01.01c; PS.02.01.01a; PS.02.01.02a; AS.02.03.01c; AS.02.01.02b
NETS: 2a,b; 4a,b
DOK: 4

Instructional Strategies

- PBL activity – Each small group will research one plant and one animal and create a presentation to introduce them to the class. This might include discussing:
  - soil type
  - pollinators
  - fertilization
  - irrigation
  - breeding
  - selection
  - reproduction
  - nutrition
  - products
  - environment
  - wildlife effects
- Students will use iPads on a daily basis including using Edmodo as an instructional platform
- Mini projects and class discussions based on student developed list of "Need to Knows"
- Presentation of final product to class
- Field trip to Lincoln Aquaculture Farm to learn about fish breeding and community resources

Assessments/Evaluations

- Formative:
  - Mini projects
  - Discussions
  - Quiz
- Summative:
  - PBL activity – assessed using a scoring guide
  - Plant and Animal Production test

Sample Assessment Questions

- What are the six main nutrients? How can you tell if your animal is nutrient deficient?
- What are the different types of soil? What type does your plant prefer?

Instructional Resources/Tools

- Flower model (Erin Carl's room)
- Leaf models (Ag Bio room)
- Preserved reproductive tracts (Stefanie Eslinger's room)
- Student reference books
- Various websites and apps

Literacy Connections

- Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest
- Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts
- Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically
- Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation
- Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation

Cross Curricular Connections

- ELA:
  - Research
  - Speaking/presentation
- Science:
  - Impact of science and technology on society
  - Changes in ecosystems and interactions of organisms in the environment

Strand	
Big Idea	**Unit 4: Processing**

Standard	**Learning Targets**
D. Identify selection and processing techniques for creating food and natural resource products	1. • Understand how to safely process products for storage, distribution and consumption • Explain how processing techniques influence the nutritional value of the food • Identify common measurements and give examples of their uses

Alignments:
CCSS: 11-12.RST.3; 11-12.RST.4; 9-10.RST.5; 9-10.WHST.8; N-Q.1
Performance: 1.4, 1.6, 1.10
Knowledge: (MA) 1,2 (SC) 8
HEGLE: HME.4.A
SCCLE: SC7.1.B; SC8.1.B
ACS: SF.1; SS.1g; SS.8c; ELA.7; ELA.8
ASINS: FPP.04; FPP.01.01.01a
NSFACS: 9.9.5; 14.3.3; 14.4.1; 14.4.2
NETS: 1a
DOK: 2

Instructional Strategies

- Students will use iPads on a daily basis including using Edmodo as an instructional platform
- Kitchen safety and measurement practice (group discussion)
- Food labs:
  - canning – salsa or jam
  - ice cream/butter/cheese
  - paper making or wreaths
  - jerky making
- Product competition
- Field trip to Central Dairy

Assessments/Evaluations

- Formative:
  - Labs
  - Kitchen Safety quiz
- Summative:
  - Food scoring guide competition (see scoring guide)

Sample Assessment Questions

- T/F You should generally level off ingredients in a measuring spoon unless the recipe says "heaping."
- Name two things you should keep in mind when storing food products.

Instructional Resources/Tools

- Food dehydrator
- Kitchen/lab
- Canning supplies
- Recipe websites such as:
  - Food.com
  - epicurious.com
  - allrecipes.com
  - yummly.com
  - foodnetwork.com

Literacy Connections

- Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text
- Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics
- Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy)
- Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation

Cross Curricular Connections

- ELA: Reading and following complex multistep procedures
- Science: Impact of science and technology and human activity
- Math: Measurement of fractions
- Health: Life management skills

Strand	
Big Idea	**Unit 5: Marketing and Business**

Standards	**Learning Targets**
E. Identify and describe how to market and sell agricultural/natural resource products	1. • Identify potential customers and describe the factors that motivate a person to make a purchase • Describe the components and purpose of a promotional campaign and develop advertisements for an agricultural product • Describe how supply and demand interacts to determine the price of agricultural products • Describe the significance of AFNR products in today's economy

Alignments:
CCSS: 11-12.RST.9; 9-10.WHST.2; 9-10.WHST.4; 9-10.WHST.7; 9-10.WHST.8; 9-10.WHST.9; S-ID.2
Performance: 1.4, 1.6, 1.10, 2.3, 4.1, 4.6
Knowledge: (CA) 1,4,6 (SS) 4
ACS: SS.7b; SS.7d; SS.7g; SS.7h
AFNR: ABS.06.04; ABS.06.05.01b
NETS: 1b,c; 2b; 3b
DOK: 4

Instructional Strategies

- PBL – Small groups will choose a product from the previous unit to market and sell. This will include:
  - creating and conducting a market survey
  - creating appropriate packaging for their product
  - assessing demand for their product and opportunities to sell to their target audience
  - advertising and sale of the product
- Students will use iPads on a daily basis including using Edmodo as an instructional platform
- Analyze market research (survey)
- Mini-projects, class discussion and labs based on student-developed list of "Need to Knows"
- Field trip to MFA to learn about marketing

Assessments/Evaluations

- Formative:
  - Peer assessment of created surveys
  - Quiz on marketing and advertising
- Summative:
  - Presentation of products (PBL – see scoring guide)

Sample Assessment Questions

- The higher the price of milk, all other things being equal, the quantity consumed:
  a. will increase
  b. will decrease
  c. will not change
  d. cannot be predicted from information given

Instructional Resources/Tools

- Student reference books
- Agribusiness Marketing and Sales curriculum
- FCS financial website and curriculum

Literacy Connections

- Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible
- Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes
- Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience
- Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation
- Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation
- Draw evidence from informational texts to support analysis, reflection, and research

Cross Curricular Connections

- ELA:
  - Research
  - Speaking/presentation
- Social Studies: Economics

Strand	
Big Idea	**Unit 6: Agriculture Systems Management**

Standard

F. Understand the principles of agriculture system management including how to transport and distribute products

Learning Targets

1.

- Understand how products are transported, shipped and distributed
- Demonstrate safety precautions when using tools for a specific task around bystanders
- Use tools, equipment, machinery and technology appropriately to work within areas related to AFNR

Alignments:
CCSS: 9-10.RST.3; 9-10.WHST.8; G-MG.3
Performance: 2.5, 4.7
Knowledge: (CA) 3 (MA) 1 (FA) 1
NACS: SF.5
NAFNRS: PST.04; CS.08.01.01a; CS.08.02.01b
NETS: 1b; 4b
DOK: 4

Instructional Strategies

- Students will use iPads on a daily basis including using Edmodo as an instructional platform
- Mini projects on:
  - transportation
  - shipping
  - distribution
- Technical/construction labs
- Field trip: Shipping company (for example, river, rail or trucking)

Assessments/Evaluations

- Formative:
  - Mini-project
  - Quiz on tool identification and safety
- Summative:
  - Project: Invent and build a structure that will improve upon current standards in the industry (see scoring guide). For example, build a:
    - better chicken coop
    - model of a better irrigation system

Sample Assessment Questions

- Name three safety procedures when working with construction materials

Instructional Resources/Tools

- Shop or technical lab space
- Wood and metal working tools (hand and power tools)
- Building materials
- Ag mechanics and structures reference books
- Websites like ehow.com

Literacy Connections

- Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text
- Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation

Cross Curricular Connections

- ELA:
  - Research
  - Speaking/presentation
- Science: Impact of science and technology on society
- Math:
  - Measurement (Integrated Math)
  - Modeling (Geometry)
- Fine Arts: 3D modeling

Strand	
Big Idea	**Unit 7: Natural Resources and Conservation**

Standard	**Learning Targets**
G. Identify the importance of conserving and managing our natural resources for human use	1. • Develop an awareness of opportunities in conservation, including the requirements and benefits associated with groups like the Stream Team, and how they are valuable to the school and community • Describe the social, aesthetic, recreational, scientific, and educational values and benefits associated with natural resources • Describe how naturally occurring organisms benefit humans and the environment • Describe techniques used to manage a habitat for natural or human use

Alignments:
CCSS: 11-12.W.7; 11-12.W.8; 11-12.SL.3; 11-12.SL.4;11-12.SL.5; 11-12.RST.3; 11-12.RST.7; 9-10.WHST.6; 9-10.WHST.7; 9-10.WHST.8; N-Q.1
Performance: 1.4, 1.6, 1.8, 1.10, 3.5
Knowledge: (CA) 3,4 (SC) 3
SCCLE: SC4.1.D; SC3.1.A
CASE: NRS.01
NETS: 1b; 2a,b
DOK: 4

Instructional Strategies

- Project: Individually design and build a scale model of a habitat in order to manage a population of fish or wildlife
- Students will use iPads on a daily basis including using Edmodo as an instructional platform
- Mini projects or labs covering the following topics:
  - Watershed and water cycle
  - Pollution
  - Forestry
  - Soil conservation
  - Habitat management
  - Stream Team
  - Recreation and use
- Field trip to Runge Nature Center to learn about how naturalists and conservationists work
- Stream Team clean-up
- Guest speaker: Conservation Department and/or DNR

Assessments/Evaluations

- Formative
  - Mini projects
  - Conservation basic quiz
- Summative
  - Habitat project (see scoring guide)

Sample Assessment Questions

- Conservation is the _____ of natural resources:
  a. Preservation
  b. Systematic abuse
  c. Wise use
  d. Non-use
  e. Destruction

Instructional Resources/Tools

- Materials include:
  - shoe boxes
  - clay
  - boards, etc.
- DNR website
- Missouri Conservation Department website and publications
- Fish and Wildlife Management curriculum
- "Life" video series (narrated by Oprah Winfrey)

Literacy Connections

- Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation
- Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation
- Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used
- Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks
- Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest
- Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text
- Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem
- Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically
- Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation

- Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation

Cross Curricular Connections

- Science:
  - Environmental Science
  - Ecology
  - Conservation
- Fine Arts: Creating 3-D models

Strand	
Big Idea	**Unit 8: Careers**

Standard	**Learning Targets**
H. Identify opportunities and prepare for a successful career in AFNR	1. • Develop an awareness of career opportunities in AFNR and the requirements, duties, and benefits associated with them • Create my personal plan of study, including identifying my pathway and possible project topics (stepping stones)

Alignments:
CCSS: 9-10.SL.1a,d; 11-12.RH.7; 9-10.WHST.6; 9-10.WHST.7; 9-10.WHST.8
Performance: 1.2, 2.6, 4.5
Knowledge: (CA) 3
NACS: SS.4d
NAFNRS: CS.03; CS.01.06.01a,b
NETS: 2b; 3; 4c
DOK: 3

Instructional Strategies

- Students will use iPads on a daily basis, including using Edmodo, as an instructional platform
- Class discussion to re-cap academy basics and possible pathways
- Students will take a survey about different pathways to see where their interests lie
- Project to research career opportunities within that pathway
- Job shadowing

Assessments/Evaluations

- Formative:
  - Survey results
  - Pieces of portfolio (see below)
- Summative:
  - Career Poster: "A Day in the Life of _____" – Using Tackk (an online poster-making website)
  - Intro to AFNR Portfolio including:
    - a possible plan of study
    - stepping stones (SAE)
    - a preferred pathway
    - career possibilities
    - interviewing employees in chosen field during job shadowing
    - pictures from job shadowing

Sample Assessment Questions

- What are the four pathways?
- Which do you have the most interest in? Why?

Instructional Resources/Tools

- School counselors
- Missouri Connections
- FFA website
- Careeronestop.org
- PACES program

Literacy Connections

- Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grades 9–10 topics, texts, and issues,* building on others' ideas and expressing their own clearly and persuasively
  a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas
  d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented
- Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem
- Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically
- Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation
- Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation

Cross Curricular Connections

- ELA:
  - Research
  - Speaking/presentation
- Science: Obtaining, evaluating and communicating information (NGSS)