Career & Technical Education
Curriculum Alignment with
Common Core ELA & Math Standards

Principles of Agricultural Science and Technology
# AGRICULTURAL CAREER CLUSTER

## CAREER MAJORS/CAREER PATHWAYS

<table>
<thead>
<tr>
<th>Animal Science Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriscience Exploration (7th-8th Grade) - (no credit toward career major)</td>
</tr>
<tr>
<td>Recommended Courses</td>
</tr>
<tr>
<td>Principles of Agricultural Science &amp; Technology</td>
</tr>
<tr>
<td>Agriscience</td>
</tr>
<tr>
<td>Animal Science</td>
</tr>
<tr>
<td>Animal Technology</td>
</tr>
<tr>
<td>Equine Science</td>
</tr>
<tr>
<td>Adv. Animal Science</td>
</tr>
<tr>
<td>Small Animal Tech</td>
</tr>
<tr>
<td>Veterinary Science</td>
</tr>
<tr>
<td>Elective Courses</td>
</tr>
<tr>
<td>Ag. Math</td>
</tr>
<tr>
<td>Food Science &amp; Technology</td>
</tr>
<tr>
<td>Food Processing, Dist. &amp; Mkt.</td>
</tr>
<tr>
<td>Aquaculture</td>
</tr>
<tr>
<td>Ag. Sales and Marketing</td>
</tr>
<tr>
<td>Ag. Construction Skills</td>
</tr>
<tr>
<td>Ag. Power &amp; Machinery Operation</td>
</tr>
<tr>
<td>Agri-Biology</td>
</tr>
<tr>
<td>Adv. Ag. Economics and Agribusiness</td>
</tr>
<tr>
<td>Ag. Business/Farm Mgmt</td>
</tr>
<tr>
<td>Ag. Employability Skills</td>
</tr>
<tr>
<td>• Leadership Dynamics</td>
</tr>
<tr>
<td>• Business Management</td>
</tr>
<tr>
<td>• Marketing Management</td>
</tr>
<tr>
<td>* Other Career and Technical Education Courses</td>
</tr>
<tr>
<td>• Other Career and Technical Education courses directly related to the student’s Career Major/Career Pathway.</td>
</tr>
<tr>
<td>• “Bolded” courses are the “primary recommended courses” for this career major/career pathway. At least 3 of the 4 courses should come from this group of courses.</td>
</tr>
</tbody>
</table>

To complete a career major, students must earn four career-related credits within the career major. Three of the four credits should come from the recommended courses for that major.

**NOTE:** Agribiology is an interdisciplinary course, which meets the graduation requirements for Life Science.
Agriscience Interdisciplinary course also meets the graduation requirements for Life Science.
Agriculture Math is an interdisciplinary course, which may be offered for Math Credit.
<table>
<thead>
<tr>
<th>GRADE</th>
<th>ENGLISH</th>
<th>MATH</th>
<th>SCIENCE</th>
<th>SOCIAL STUDIES</th>
<th>REQUIRED COURSES</th>
<th>RECOMMENDED ELECTIVE COURSES</th>
<th>OTHER ELECTIVE COURSES</th>
<th>CAREER AND TECHNICAL EDUCATION COURSES</th>
<th>CREDENTIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>English 1</td>
<td>Algebra 1</td>
<td>Earth Science</td>
<td>Survey of SS</td>
<td>Health/PE</td>
<td>Principles of Ag.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>English 2</td>
<td>Geometry</td>
<td>Biology</td>
<td>World Civ.</td>
<td>Agriscience Of Animal Science</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>English 3</td>
<td>Algebra 2</td>
<td>Chemistry</td>
<td>US History</td>
<td>Small Animal or Animal Science</td>
<td>Equine Science</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>* Pre Cal Rec. for College</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Year 13</td>
<td>Writing</td>
<td>Math</td>
<td>Chemistry + Labs</td>
<td>Humanities</td>
<td>Animal Science</td>
<td>Agronomy</td>
<td>Area of Specialization Course</td>
<td></td>
<td>BS Degree</td>
</tr>
<tr>
<td>Year 14</td>
<td>Writing</td>
<td>Biology</td>
<td>Social Sciences</td>
<td>Area of Specialization Course</td>
<td>Area of Specialization Course</td>
<td>Area of Specialization Course</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 15</td>
<td>Organic Chemistry</td>
<td>Animal Nutrition</td>
<td>Production Courses</td>
<td>Area of Specialization Course</td>
<td>Area of Specialization Course</td>
<td>Area of Specialization Course</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 16</td>
<td>Capstone/Sr. Seminar Class</td>
<td>Area of Specialization Course</td>
<td>Area of Specialization Course</td>
<td>Area of Specialization Course</td>
<td>Area of Specialization Course</td>
<td>Area of Specialization Course</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Categories of courses (e.g., Required, Recommended Electives, other Electives and career and Technical Education) apply to both secondary and postsecondary levels.
**Course Description:** This course provides instruction in the foundations of the various segments of the agricultural industry. Agricultural career opportunities will be emphasized. Animal science, plant and land science, and agricultural mechanics skills will be the focus of the curriculum. The selection and planning of a supervised agricultural experience program and related record keeping will be presented. Leadership development will be provided through FFA. Students will receive personal guidance and counseling with preparatory instructional program selection.

<table>
<thead>
<tr>
<th>Content/Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will</td>
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<tr>
<td>1</td>
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<tr>
<td>2</td>
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<td>3</td>
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<td>4</td>
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<td>5</td>
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<td>7</td>
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<tr>
<td>8</td>
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<tr>
<td>9</td>
</tr>
</tbody>
</table>

**Connections**

- Kentucky Occupational Skill Standards
- Secretary’s Commission on Achieving Necessary Skills (SCANS)
<table>
<thead>
<tr>
<th>Unit</th>
<th>Topics</th>
<th>Lesson</th>
<th>Activity</th>
<th>Learning Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunities in Ag</td>
<td>History of Ag.</td>
<td>Define Agriculture</td>
<td>Card Game; Use Frayer Model</td>
<td>Classify products related to agriculture; Evaluate data trends based on socio-demographics (where people live) and farming as a career</td>
</tr>
<tr>
<td>Importance of Ag</td>
<td>Careers in Ag.</td>
<td>Snickers Activity</td>
<td>Justify the importance of agriculture in today's society; Differentiate career pathways and opportunities in agriculture</td>
<td></td>
</tr>
<tr>
<td>Feeding the World</td>
<td>Who gets the cookie from the cookie jar?</td>
<td>Cookie Activity</td>
<td>Explain why American agriculture is so important to feeding the world population</td>
<td></td>
</tr>
<tr>
<td>Careers in Agriculture</td>
<td>Careers in Ag.</td>
<td>Career Profile</td>
<td>Compose a career profile over careers in agriculture</td>
<td></td>
</tr>
<tr>
<td>Agriculture Leadership</td>
<td>Ag. Leadership</td>
<td>History and operation of FFA</td>
<td>Video; Sing the Creed; Breaking Down the Creed</td>
<td>Analyze importance of and present the FFA creed</td>
</tr>
<tr>
<td></td>
<td>Civic and Agricultural Organizations</td>
<td>Government</td>
<td>Governmental Guest Speaker</td>
<td>Describe the role of government in agriculture</td>
</tr>
<tr>
<td></td>
<td>Parliamentary Procedure</td>
<td>Parliamentary Procedure</td>
<td>Round Robin; Parli Contest; Christmas Party Activity</td>
<td>Demonstrate proper use of parliamentary procedure and good debate</td>
</tr>
<tr>
<td></td>
<td>History of the FFA</td>
<td>Timeline Decades Day - Dress like the decade and present 10 different dates</td>
<td>Compare U.S. History to the FFA History</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Organization</td>
<td>Program of Activity</td>
<td>Create a 10 activity POA</td>
<td>Create a 10 activity POA</td>
</tr>
<tr>
<td>SAE</td>
<td>Record Keeping</td>
<td>Record Keeping</td>
<td>Record keeping curriculum</td>
<td>Develop sound financial practices</td>
</tr>
<tr>
<td></td>
<td>SAE Plan</td>
<td>This is my SAE</td>
<td>Create an SAE Plan; Identify needs to get started; Develop a management plan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SAE Spotlight</td>
<td>SAE Showcase with parent night or other</td>
<td>Evaluate your SAE; Apply best management practices based on evaluations</td>
<td></td>
</tr>
<tr>
<td>Animal Science</td>
<td>Breeds</td>
<td>Breed ID</td>
<td>Breed ID Booklet</td>
<td>Create a breed profile; Compare and contrast common breeds in Kentucky</td>
</tr>
<tr>
<td></td>
<td>Terminology</td>
<td>Animal Terms</td>
<td>Animal Terms Bingo</td>
<td>Demonstrate proper use of Animal Terminology</td>
</tr>
<tr>
<td></td>
<td>Production Systems</td>
<td>Vertical Integration, Horizontal Intergation, Locally Grown, Grass Fed, Feed Lot, Organic</td>
<td>Differentiate between various production systems</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Careers in Animal Science</td>
<td>Farm to Fork Project</td>
<td>Identify and describe various agricultural careers from Farm to Fork</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Taxonomy</td>
<td>Classroom Taxonomy Sort</td>
<td>Classify animals into different taxonomic classifications</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Small Animal Breeds</td>
<td>Small Animal Jigsaw</td>
<td>Describe animals into different taxonomic classifications</td>
<td></td>
</tr>
<tr>
<td>Plant</td>
<td>Basic plant science and plant parts</td>
<td>Flowers Parts</td>
<td>Dissect and identify parts of a flower - Alstroemeria is best</td>
<td>Dissect and identify parts of a flower and its function</td>
</tr>
<tr>
<td></td>
<td>Plant needs/Nutrition</td>
<td>Nutrient Testing</td>
<td>Dr. Dirt Lab; Lab Aids kit</td>
<td>Analyze macronutrients found in soil samples</td>
</tr>
<tr>
<td></td>
<td>Plant physiology</td>
<td>Transpiration</td>
<td>AFNR Lab</td>
<td>Explain plant physiological processes</td>
</tr>
<tr>
<td></td>
<td>Propagation</td>
<td>Asexual Propagation</td>
<td>Cuttings using hormone vs. no hormone, sand vs. perlite vs. promix</td>
<td>Demonstrate proper asexual propagation techniques</td>
</tr>
<tr>
<td>Ag. Safety 5 Days</td>
<td>Propagation</td>
<td>Sexual Propagation</td>
<td>Seed Experiment</td>
<td>Evaluate the impact of external factors on seed germination</td>
</tr>
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<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>Risks</td>
<td>Risk Management Essay</td>
<td>National FFA Risk Management Curriculum</td>
<td>Apply best management practices to their SAE; Formulate an essay describing Risk Management practices</td>
<td></td>
</tr>
<tr>
<td>Security Procedures</td>
<td>Do this Not That Posters</td>
<td>National FFA Risk Management Curriculum</td>
<td>Demonstrate safe practices in agriculture</td>
<td></td>
</tr>
<tr>
<td>Hazardous Substances</td>
<td>MSDS Project</td>
<td>MSDS Read for information (Vet Sc.)</td>
<td>Analyze MSDS sheets and warning labels on chemicals for safe use practices</td>
<td></td>
</tr>
<tr>
<td>Safety Organization</td>
<td>Governmental Safety Organizations</td>
<td>National FFA Risk Management Curriculum</td>
<td>Explain the role of safety organizations in the workplace</td>
<td></td>
</tr>
<tr>
<td>Accident Prevention</td>
<td>Kayle's Difficult Decision</td>
<td>National FFA Risk Management Curriculum</td>
<td>Evaluate potential financial losses when proper decision making processes to remain accident free are not followed</td>
<td></td>
</tr>
<tr>
<td>Measurement</td>
<td>Measurement Scavenger Hunt; MathWorksheets.com</td>
<td>National FFA Risk Management Curriculum</td>
<td>Measure various objects with a tape measure</td>
<td></td>
</tr>
<tr>
<td>GPS</td>
<td>Arc GIS App to determine Acarage</td>
<td>National FFA Risk Management Curriculum</td>
<td>Evaluate the importance and effects of GIS and GPS on the future of the agricultural industry</td>
<td></td>
</tr>
<tr>
<td>Building materials</td>
<td>Can you Build it?</td>
<td>National FFA Risk Management Curriculum</td>
<td>Create a materials list for a building project</td>
<td></td>
</tr>
<tr>
<td>Design and Project Planning</td>
<td>Bird House Design</td>
<td>National FFA Risk Management Curriculum</td>
<td>Create a sketch, scaled drawing, and materials list for a bird house</td>
<td></td>
</tr>
<tr>
<td>Water Quality</td>
<td>Water Testing; Dilution Lab</td>
<td>National FFA Risk Management Curriculum</td>
<td>Analyze water samples for pollutants; Evaluate the pollutants potential impacts on the ecosystem</td>
<td></td>
</tr>
<tr>
<td>Conservation</td>
<td>Erosion</td>
<td>Erosion Lab [Lab Kit]; Erosion Scavenger Hunt</td>
<td>Recognize the types of erosion; Evaluate the causes and effects of erosion</td>
<td></td>
</tr>
<tr>
<td>Ecosystems</td>
<td>Populations</td>
<td>Oh, Deer</td>
<td>Develop connections between biotic and abiotic factors in an ecosystem</td>
<td></td>
</tr>
<tr>
<td>Environmental 6 Days</td>
<td>Environmental 6 Days</td>
<td></td>
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<td></td>
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<tr>
<td>Environmental 6 Days</td>
<td>Environmental 6 Days</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Ag. Innovations 5 Days</td>
<td>Alternative Fuels</td>
<td>Comparision of Two Fuels</td>
<td>Lab Aids Lab</td>
<td>Compare and contrast the use of ethanol and kerosene</td>
</tr>
<tr>
<td>Agriculture Issues</td>
<td>Socratic Seminar</td>
<td>Issues Debate</td>
<td>Debate pros and cons of various agriculture issues</td>
<td></td>
</tr>
<tr>
<td>Biotechnology and Food Science</td>
<td>Who cut the Cheese?</td>
<td>Cheese Production Lab</td>
<td>Produce cheese following a lab procedure</td>
<td></td>
</tr>
</tbody>
</table>
Principles of Agriculture Science and Technology  

This course provides instruction in the foundations of the various segments of the agricultural industry. Agricultural career opportunities will be emphasized. Animal science, plant and land science, and agricultural mechanics skills will be the focus of the curriculum. The selection and planning of a supervised agricultural experience program and related record keeping will be presented. Leadership development will be provided through FFA. Students will receive personal guidance and counseling with preparatory instructional program selection.

Technical Content
1-Demonstrate employability and social skills relative to the career cluster

KY Core Academic Standards (Big Idea)
Career Awareness, Exploration, Planning - Vocational Studies
Career awareness, exploration and planning gives students the opportunity to discover the various career areas that exist and introduce them to the realities involved with the workplace. Many factors need to be considered when selecting a career path and preparing for employment. Career awareness, exploration and planning will enable students to recognize the value of education, learn how to plan for careers and integrate academic subjects.

Consumer Decisions - Vocational Studies
Individual and families need to make consumer decisions due to the numerous products/services on the market, multiple advertising techniques, and the need to make responsible financial management decisions. Accessing and assessing consumer information, comparing and evaluating products and services, provides basis for making effective consumer decisions. Consumer decisions influence the use of resources and the impact they have on the community and environment.

English/Language Arts Common Core Standards
CC.9-10.L.1 Conventions of Standard English: Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
CC.9-10.SL.4 Presentation of Knowledge and Ideas: 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.
CC.9-10.W.4 Production and Distribution of Writing: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
CC.9-10.W.8 Research to Build and Present Knowledge: 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.

21st Century Skills and Knowledge
Global Awareness
Financial, Economic, Business and Entrepreneurial Literacy
Civic Literacy
Health Literacy
Creativity and Innovation
Critical Thinking and Problem Solving
Communication
Collaboration
Information Literacy
Media Literacy
## KOSSA Standards

- **OC001** Apply use of related electronic technology (e-mail, computer applications, GPS, precision farming, ultrasound, electronic ear tags, and computer feeding).
- **OC004** Maintain awareness of current trends in production agriculture through industry associations, trade journals, and internet resources.
- **OL003** Use appropriate agricultural terminology.

## Learning Targets

<table>
<thead>
<tr>
<th>Learning Target</th>
<th>Sample Learner Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classify products related to agriculture; Evaluate data trends based on socio-demographics (where people live) and farming as a career</td>
<td>-Files: AG Bio-products labels, What is Agriculture Assignment, What is Agriculture Lesson 1</td>
</tr>
<tr>
<td>Justify the importance of agriculture in today's society; Differentiate career pathways and opportunities in agriculture</td>
<td>-Put the ingredients for a candy bar on the board or a projector. Divide the students into pairs and have them brainstorm all of the careers that were involved in getting the candy bar from the farm to the &quot;Wal-Mart&quot; (or nearest grocery) shelves. It is helpful to give some hints to get them started. Encourage them to think outside the box. At the end of an allotted time (10 minutes or so) call stop and have them go around the room and say a job, they can not duplicate a job that someone else has already called. Whichever team had the most legitimate jobs gets the candy bar.</td>
</tr>
<tr>
<td>Explain why American agriculture is so important to feeding the world population</td>
<td>-Document: World Hunger (Cookie Activity)</td>
</tr>
<tr>
<td>Compose a career profile over careers in agriculture</td>
<td>-File: Career Profile</td>
</tr>
</tbody>
</table>

## Technical Literacy Standards

- **Key Ideas and Details - 9-10** - Cite specific evidence to support analysis of text
- **Craft and Structure - 9-10** - Determine the meaning of symbols, terms, and domain-specific words or phrases
- **Integration of Knowledge and Ideas - 9-10** - Translate quantitative or technical information expressed in words in a text into visual form
- **Text Types and Purpose - 9-10** - Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes
**Technical Content**

1. Demonstrate employability and social skills relative to the career cluster.
2. Explore basic agricultural skills needed, including: math, communication, and employability.
3. Participate in FFA leadership activities which are integrated into the course.

**KY Core Academic Standards (Big Idea)**

**Career Awareness, Exploration, Planning - Vocational Studies**
Career awareness, exploration, and planning gives students the opportunity to discover the various career areas that exist and introduce them to the realities involved with the workplace. Many factors need to be considered when selecting a career path and preparing for employment. Career awareness, exploration, and planning will enable students to recognize the value of education, learn how to plan for careers and integrate academic subjects.

**Employability Skills - Vocational Studies**
Employability skills will focus on students’ competencies with their work habits and academic/technical skills that will impact an individual’s success in school and workplace. School-to-work transition skills will help students develop interpersonal skills and positive work habits.

**Information, Communication and Productivity - Technology**
Students demonstrate a sound understanding of the nature and operations of technology systems. Students use technology to learn, to communicate, increase productivity and become competent users of technology.

**Government and Civics - Social Studies**
The study of government and civics equips students to understand the nature of government and the unique characteristics of American representative democracy, including its fundamental principles, structure, and the role of citizens. Understanding the historical development of structures of power, authority, and governance and their evolving functions in contemporary U.S. society and other parts of the world is essential for developing civic competence. An understanding of civic ideals and practices of citizenship is critical to full participation in society and is a central purpose of the social studies.

**English/Language Arts Common Core Standards**
CC.9-10.SL.1.d Comprehension and Collaboration: 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.
CC.9-10.SL.3 Comprehension and Collaboration: Evaluate a speaker’s point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.
CC.9-10.SL.1.b Comprehension and Collaboration: Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed.
### 21st Century Skills and Knowledge

- Leadership and Responsibility
- Civic Literacy
- Communication
- Critical Thinking and Problem Solving
- Creativity and Innovation
- Collaboration
- Information Literacy
- Media Literacy
- ICT (Information, Communications, and Technology) Literacy
- Flexibility and Adaptability

### KOSSA Standards

- **AA010** Demonstrate the characteristics of a team player.
- **AA012** Perform techniques used as a team leader.
- **AA011** Contrast the roles of a team with the role of an individual.
- **AA014** Organize and deliver a persuasive oral presentation.
- **AA013** Demonstrate productive relationships within the work group.

### Learning Targets

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyze importance of and present the FFA creed</td>
<td>-If you have video cameras available (like Flip), divide the students into groups of 5. Have them each draw a character such as cheerleader, 90 year old granny, Santa Claus, rapper, army sergeant... They will pick a paragraph within their groups and say their paragraph for the camera. Put them all together and watch them in front of the class. They will see the Creed at least 5 times and will have a little fun!</td>
</tr>
<tr>
<td>Identify and describe local civic and agricultural organizations</td>
<td>-File: Local civic and agriculture organizations</td>
</tr>
<tr>
<td>Describe the role of government in agriculture</td>
<td>-File: Government Guest Speaker</td>
</tr>
<tr>
<td>Demonstrate proper use of parliamentary procedure and good debate</td>
<td>-Document: Parliamentary Procedures in Class Contest</td>
</tr>
<tr>
<td>Compare U.S. History to the FFA History</td>
<td>-Document: Time Line of Agriculture (FFA)</td>
</tr>
<tr>
<td>Describe the hierarchy and organization of FFA</td>
<td>-File: Hierarchy of FFA</td>
</tr>
<tr>
<td>Explain the importance of the program of activities in an FFA chapter</td>
<td>-File: Program of Activities</td>
</tr>
</tbody>
</table>

### Technical Literacy Standards

- **Integration of Knowledge and Ideas - 9-10**: Translate quantitative or technical information expressed in words in a text into visual form
- **Craft and Structure - 9-10**: Determine the meaning of symbols, terms, and domain-specific words or phrases
- **Text Types and Purpose - 9-10**: Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes
**Technical Content**

8- Maintain records on supervised agricultural experience program and be able to summarize and analyze results in making financial decisions.

**KY Core Academic Standards (Big Idea)**

Career Awareness, Exploration, Planning - Vocational Studies

Career awareness, exploration, and planning gives students the opportunity to discover the various career areas that exist and introduce them to the realities involved with the workplace. Many factors need to be considered when selecting a career path and preparing for employment. Career awareness, exploration, and planning will enable students to recognize the value of education, learn how to plan for careers and integrate academic subjects.

Employability Skills - Vocational Studies

Employability skills will focus on students’ competencies with their work habits and academic/technical skills that will impact an individual’s success in school and workplace. School-to-work transition skills will help students develop interpersonal skills and positive work habits.

Financial Literacy - Vocational Studies

Financial literacy provides knowledge so that students are responsible for their personal economic well-being. As consumers, individuals need economic knowledge as a base for making financial decisions impacting short and long term goals throughout one’s lifetime. Financial literacy will empower students by providing them with the knowledge, skills and awareness needed to establish a foundation for a future of financial responsibility and economic independence.

Economics - Social Studies

Economics includes the study of production, distribution and consumption of goods and services. Students need to understand how their economic decisions affect them, others, the nation, and the world. The purpose of economic education is to enable individuals to function effectively both in their own personal lives and as citizens and participants in an increasingly connected world economy. Students need to understand the benefits and costs of economic interaction and interdependence among people, societies, and governments.

**English/Language Arts Common Core Standards**

CC.9-10.SL.4 Presentation of Knowledge and Ideas: 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.

**Mathematics Common Core Standards**

CC.9-12.N.Q.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.*

CC.9-12.N.Q.2 Define appropriate quantities for the purpose of descriptive modeling.*

CC.9-12.N.Q.3 Choose a level of accuracy appropriate to limitations when reporting quantities.*

CC.9-12.A.SSE.1 Interpret expressions that represent a quantity in terms of its context.*

CC.9-12.A.CED.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.*

CC.9-12.A.CED.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm’s law $V = IR$ to highlight resistance $R$.*

CC.9-12.F.LE.5 Interpret the parameters in a linear or exponential function in terms of a context.*

CC.9-12.A.REI.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
21st Century Skills and Knowledge
Financial, Economic, Business and Entrepreneurial Literacy
Critical Thinking and Problem Solving
Communication
Collaboration
Information Literacy
Media Literacy
ICT (Information, Communications, and Technology) Literacy
Flexibility and Adaptability
Initiative and Self-Direction
Social and Cross-Cultural Skills

KOSSA Standards
OC001 Apply use of related electronic technology (e-mail, computer applications, GPS, precision farming, ultrasound, electronic ear tags, and computer feeding).
OD001 Apply effective record keeping skills including financial records.
OD002 Demonstrate knowledge of budgeting and cash flow.
OL003 Use appropriate agricultural terminology.
AB001 Add, subtract, multiply, and divide four-digit numbers with/without the use of a calculator.
AB003 Apply basic math functions to solve problems.
AB005 Convert fractional measurement to decimal measurement.
AB006 Compute within measurement systems.
AB008 Calculate with percents, rate, ration, and proportion with the use of a calculator.
AB009 Make reasonable estimates.

Learning Targets
Develop sound financial practices
- Use of KY Record Keeping Materials
Create an SAE Plan; Identify needs to get started; Develop a management plan
- File name: SAE explore assignment
- File: SAE Planning Sheet
- File: Understanding SAE worksheet
Evaluate your SAE; Apply best management practices based on evaluations
- File: SAE Project Showcase

Sample Learner Activities - Click in the box to go to Activities

Technical Literacy Standards
Craft and Structure - 9-10 - Determine the meaning of symbols, terms, and domain-specific words or phrases
Integration of Knowledge and Ideas - 9-10 - Translate technical information into visual form
Text Types and Purpose - 9-10 - Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes
Course Title: Principles of Agriculture Science and Technology  
Grade Levels: 9th  
Credit Value: 1

This course provides instruction in the foundations of the various segments of the agricultural industry. Agricultural career opportunities will be emphasized. Animal science, plant and land science, and agricultural mechanics skills will be the focus of the curriculum. The selection and planning of a supervised agricultural experience program and related record keeping will be presented. Leadership development will be provided through FFA. Students will receive personal guidance and counseling with preparatory instructional program selection.

Prerequisites: None

Unit Title: Introduction to Animal Science

Technical Content

5 - Identify and examine general animal science

KY Core Academic Standards (Big Idea)

Career Awareness, Exploration, Planning - Vocational Studies
Career awareness, exploration and planning gives students the opportunity to discover the various career areas that exist and introduce them to the realities involved with the workplace. Many factors need to be considered when selecting a career path and preparing for employment. Career awareness, exploration and planning will enable students to recognize the value of education, learn how to plan for careers and integrate academic subjects.

Biological Change (Biological Science) - Science
The only thing certain is that everything changes. At the high school level, students evaluate the role natural selection plays in the diversity of species. Modern ideas of evolution provide a scientific explanation for three main sets of observable facts about life on Earth: the enormous number of different life forms we see about us, the systematic similarities in anatomy and molecular chemistry we see within that diversity, and the sequence of changes in fossils found in successive layers of rock that have been formed over more than a billion years.

Unity and Diversity (Biological Science) - Science
All matter is comprised of the same basic elements, goes through the same kinds of energy transformations, and uses the same kinds of forces to move. Living organisms are no exception. At the high school level, an in-depth study of the specialization and chemical changes occurring at the cellular level builds upon the foundational ideas developed earlier to investigate deoxyribonucleic acid (DNA) and effects of alterations in DNA for an individual organism as well as for a species. Emphasis at every level should be placed upon the understanding that while every living thing is composed of similar small constituents that combine in predictable

English/Language Arts Common Core Standards

CC.9-10.R.I.7 Integration of Knowledge and Ideas: Analyze various accounts of a subject told in different mediums (e.g., a person’s life story in both print and multimedia), determining which details are emphasized in each account.

CC.9-10.SL.2 Comprehension and Collaboration: Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.

CC.9-10.W.2 Text Types and Purposes: Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

21st Century Skills and Knowledge

Financial, Economic, Business and Entrepreneurial Literacy
Environmental Literacy
Creativity and Innovation
Critical Thinking and Problem Solving
Information Literacy
Media Literacy
ICT (Information, Communications, and Technology) Literacy
Flexibility and Adaptability
Initiative and Self-Direction
Social and Cross-Cultural Skills
KOSSA Standards

AC001 Understand scientific plant and animal classification.
AC002 Compare the anatomical parts and distinguishing characteristics of plants and animals.
AC004 Analyze the process of plant and animal growth and development.
OC001 Apply use of related electronic technology (e-mail, computer applications, GPS, precision farming, ultrasound, electronic ear tags, and computer feeding).
OC004 Maintain awareness of current trends in production agriculture through industry associations, trade journals, and internet resources.
OH005 Utilize understanding of varieties and breeds in the management and prevention of diseases
OL003 Use appropriate agricultural terminology.
OL005 Demonstrate knowledge of livestock breeds.

Learning Targets

<table>
<thead>
<tr>
<th>Sample Learner Activities</th>
<th>Click in the box to go to Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create a breed profile; Compare and contrast common breeds in Kentucky</td>
<td>-File Breed ID Booklet</td>
</tr>
<tr>
<td>Demonstrate proper use of Animal Terminology</td>
<td>-File: Animal Terms Bingo</td>
</tr>
<tr>
<td>Differentiate between various production systems</td>
<td>-File: Production System Activity</td>
</tr>
<tr>
<td>Identify and describe various agricultural careers from Farm to Fork</td>
<td>-File: Beef from Pasture to Plate</td>
</tr>
<tr>
<td>Classify animals into different taxonomic classifications</td>
<td>-<a href="http://www.cteonline.org/portal/default/Curriculum/Viewer/Curriculum?action=2&amp;view=viewer&amp;cmobjid=202315">http://www.cteonline.org/portal/default/Curriculum/Viewer/Curriculum?action=2&amp;view=viewer&amp;cmobjid=202315</a></td>
</tr>
<tr>
<td>Describe the reproductive systems, physiology, and breeds of various small animal species</td>
<td>-File: Small Animal Jigsaw</td>
</tr>
</tbody>
</table>

Technical Literacy Standards

Integration of Knowledge and Ideas - 9-10 - Translate quantitative or technical information expressed in words in a text into visual form
Craft and Structure - 9-10 - Determine the meaning of symbols, terms, and domain-specific words or phrases
Key Ideas and Details - 9-10 - Cite specific evidence to support analysis of text
Text Types and Purpose – 9-10 – Write arguments focused on discipline-specific content
This course provides instruction in the foundations of the various segments of the agricultural industry. Agricultural career opportunities will be emphasized. Animal science, plant and land science, and agricultural mechanics skills will be the focus of the curriculum. The selection and planning of a supervised agricultural experience program and related record keeping will be presented. Leadership development will be provided through FFA. Students will receive personal guidance and counseling with preparatory instructional program selection.

Prerequisites
None

Unit Title
Introduction to Plant Science

KY Core Academic Standards (Big Idea)

Biological Change (Biological Science) - Science
The only thing certain is that everything changes. At the high school level, students evaluate the role natural selection plays in the diversity of species. Modern ideas of evolution provide a scientific explanation for three main sets of observable facts about life on Earth: the enormous number of different life forms we see about us, the systematic similarities in anatomy and molecular chemistry we see within that diversity, and the sequence of changes in fossils found in successive layers of rock that have been formed over more than a billion years.

Unity and Diversity (Biological Science) - Science
All matter is comprised of the same basic elements, goes through the same kinds of energy transformations, and uses the same kinds of forces to move. Living organisms are no exception. At the high school level, an in-depth study of the specialization and chemical changes occurring at the cellular level builds upon the foundational ideas developed earlier to investigate deoxyribonucleic acid (DNA) and effects of alterations in DNA for an individual organism as well as for a species. Emphasis at every level should be placed upon the understanding that while every living thing is composed of similar small constituents that combine in predictable

English/Language Arts Common Core Standards

CC.9-10.W.1 Text Types and Purposes: Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
CC.9-10.W.4 Production and Distribution of Writing: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)

21st Century Skills and Knowledge

Critical Thinking and Problem Solving
Environmental Literacy
Creativity and Innovation
Communication
ICT (Information, Communications, and Technology) Literacy
Media Literacy
Initiative and Self-Direction
Information Literacy
Leadership and Responsibility
KOSSA Standards
AC001 Understand scientific plant and animal classification.
AC002 Compare the anatomical parts and distinguishing characteristics of plants and animals.
AC003 Understand the reproductive processes of plants and animals.
AC005 Be aware of biotechnology and its uses in production agriculture.
AC006 Explain the use of applied genetics in plants and animals.
OB002 Demonstrate ability to read and utilize seed tag information.
OC001 Apply use of related electronic technology (e-mail, computer applications, GPS, precision farming, ultrasound, electronic ear tags, and computer feeding).
OC004 Maintain awareness of current trends in production agriculture through industry associations, trade journals, and internet resources.
OH005 Utilize understanding of varieties and breeds in the management and prevention of diseases
OL001 Identify common agronomic plants, grains, feeds, and seeds.
OL003 Use appropriate agricultural terminology.

Learning Targets
Disect and identify parts of a flower and its function
- Materials needed: Card stock, packaging tape or laminating paper, fine-point Sharpies and Alstroemerias
- Put a list of the flower parts to be included on the board or overhead. Have students pull off 2 petals from the Alstroemerias and put them on the card stock with the tape, laminating paper. Use the Sharpies to label the parts.
- Another option is to have the students create a 3-D flower labeling all of the parts as they go.
- File: Flower Diagram

Analyze macronutrients found in soil samples
- File: How to test soil

Explain plant physiological processes
- File: Transpiration Lab

Demonstrate proper asexual propagation techniques
- Document: Propagation Experiment
- Document: Lab report
- Document: Lab Report Example

Evaluate the impact of external factors on seed germination

Technical Literacy Standards
Text Types and Purpose – 9-10 – Write arguments focused on discipline-specific content
Text Types and Purpose - 9-10 - Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes
Craft and Structure - 9-10 - Determine the meaning of symbols, terms, and domain-specific words or phrases
Integration of Knowledge and Ideas - 9-10 - Translate quantitative or technical information expressed in words in a text into visual form
Principles of Agriculture Science and Technology

This course provides instruction in the foundations of the various segments of the agricultural industry. Agricultural career opportunities will be emphasized. Animal science, plant and land science, and agricultural mechanics skills will be the focus of the curriculum. The selection and planning of a supervised agricultural experience program and related record keeping will be presented. Leadership development will be provided through FFA. Students will receive personal guidance and counseling with preparatory instructional program selection.

Agriculture Safety

Principles of Agriculture Science and Technology

This course provides instruction in the foundations of the various segments of the agricultural industry. Agricultural career opportunities will be emphasized. Animal science, plant and land science, and agricultural mechanics skills will be the focus of the curriculum. The selection and planning of a supervised agricultural experience program and related record keeping will be presented. Leadership development will be provided through FFA. Students will receive personal guidance and counseling with preparatory instructional program selection.

Unit Title: Agriculture Safety

Technical Content

1-Demonstrate employability and social skills relative to the career cluster
3-Explore basic agricultural skills needed including: math, communication, and employability skills

KY Core Academic Standards (Big Idea)

Career Awareness, Exploration, Planning - Vocational Studies
Career awareness, exploration and planning gives students the opportunity to discover the various career areas that exist and introduce them to the realities involved with the workplace. Many factors need to be considered when selecting a career path and preparing for employment. Career awareness, exploration and planning will enable students to recognize the value of education, learn how to plan for careers and integrate academic subjects.

Employability Skills - Vocational Studies
Employability skills will focus on student’s competencies with their work habits and academic/technical skills that will impact an individual’s success in school and workplace. School-to-work transition skills will help students develop interpersonal skills and positive work habits.

Safety (Health Education) - Practical Living
Accidents are a major cause of injury and death to children and adolescents. Unintentional injuries involving a motor vehicle, falls, drowning, fires, firearms and poisons can occur at home, school and work. Safe behavior protects a person from danger and lessens the effects of harmful situations.

Safety and Ethical/Social Issues - Technology
Students understand safe and ethical/social issues related to technology. Students practice and engage in safe, responsible and ethical use of technology. Students develop positive attitudes toward technology use that supports lifelong learning, collaboration, personal pursuits and productivity.

English/Language Arts Common Core Standards

CC.9-10.R.L.1 Key Ideas and Details: Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
CC.9-10.SL.4 Presentation of Knowledge and Ideas: 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.
CC.9-10.W.2 Text Types and Purposes: Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

21st Century Skills and Knowledge

Financial, Economic, Business and Entrepreneurial Literacy
Health Literacy
Environmental Literacy
Creativity and Innovation
Critical Thinking and Problem Solving
Communication
Information Literacy
ICT (Information, Communications, and Technology) Literacy
Flexibility and Adaptability
KOSSA Standards
OC004 Maintain awareness of current trends in production agriculture through industry associations, trade journals, and internet resources.
OJ003 Identify hazardous substances in the workplace.
OJ004 Identify immediate and real costs of an accident.
OJ005 Identify methods of preventing accidents in the workplace.
OJ006 Assume responsibility for the personal safety of self and others.
OJ007 Report unsafe practices to appropriate personnel.
OM003 Demonstrate the ability to safely operate basic agriculture equipment.

Learning Targets
Apply best management practices to their SAE; Formulate an essay describing Risk Management practices
Demonstrate the ability to safely operate basic agriculture equipment
Analyze MSDS sheets and warning labels on chemicals for safe use practices
Explain the role of safety organizations in the workplace
Evaluate potential financial losses when proper decision making processes to remain accident free are not followed

Sample Learner Activities
- Use National FFA’s Risk Management Program
- Files: Personal Safety in Shop
- Shop Safety Quiz
- Document: Analyzing an MSDS
- Files: No Way to Meet a Neighbor - Problem Booklet
- No way to meet a neighbor - Tips
- No way to meet a neighbor - Answer sheet
- No way to meet a neighbor - Answer Key
- File: Farming is a risky business

Technical Literacy Standards
Integration of Knowledge and Ideas - 9-10 - Translate quantitative or technical information expressed in words in a text into visual form
Craft and Structure - 9-10 - Determine the meaning of symbols, terms, and domain-specific words or phrases
Text Types and Purpose - 9-10 - Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes
**Course Title**  
**Principles of Agriculture Science and Technology**  
**Grade Levels:** 9th  
**Credit Value:** 1

This course provides instruction in the foundations of the various segments of the agricultural industry. Agricultural career opportunities will be emphasized. Animal science, plant and land science, and agricultural mechanics skills will be the focus of the curriculum. The selection and planning of a supervised agricultural experience program and related record keeping will be presented. Leadership development will be provided through FFA. Students will receive personal guidance and counseling with preparatory instructional program selection.

**Prerequisites**  
None

**Unit Title**  
Introduction to Agriculture Mechanics

**Technical Content**

6-Demonstrate basic agricultural mechanics and construction skills

**KY Core Academic Standards (Big Idea)**

Career Awareness, Exploration, Planning - Vocational Studies  
Career awareness, exploration and planning gives students the opportunity to discover the various career areas that exist and introduce them to the realities involved with the workplace. Many factors need to be considered when selecting a career path and preparing for employment. Career awareness, exploration and planning will enable students to recognize the value of education, learn how to plan for careers and integrate academic subjects.

Safety (Health Education) - Practical Living  
Accidents are a major cause of injury and death to children and adolescents. Unintentional injuries involving a motor vehicle, falls, drowning, fires, firearms and poisons can occur at home, school and work. Safe behavior protects a person from danger and lessens the effects of harmful situations.

Research, Inquiry/Problem-Solving and Innovation - Technology  
Students understand the role of technology in research and experimentation. Students engage technology in developing solutions for solving problems in the real world. Students will use technology for original creation and innovation.

**Mathematics Common Core Standards**

CC.9-12.G.MG.1 Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*  
CC.9-12.G.MG.2 Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).*  
CC.9-12.G.MG.3 Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).*  
CC.9-12.G.GPE.7 Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.*  
CC.9-12.N.Q.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.*  
CC.9-12.N.Q.2 Define appropriate quantities for the purpose of descriptive modeling.*  
CC.9-12.N.Q.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.*

**21st Century Skills and Knowledge**

Financial, Economic, Business and Entrepreneurial Literacy  
Health Literacy  
Environmental Literacy  
Creativity and Innovation  
Critical Thinking and Problem Solving  
Communication  
Information Literacy  
Initiative and Self-Direction  
Productivity and Accountability  
Leadership and Responsibility
KOSSA Standards
AB001 Add, subtract, multiply, and divide four-digit numbers with/without the use of a calculator.
AB003 Apply basic math functions to solve problems.
AB004 Convert between US and metric measurement systems.
AB005 Convert fractional measurement to decimal measurement.
AB006 Compute within measurement systems.
AB007 Document results of measurement activities and calculations.
AB009 Make reasonable estimates.
AB011 Compute calculated measurements.
OF006 Determine material supplies.
OF001 Utilize basic units of distance, dry and liquid measurements.
OJ002 Identify and follow emergency, safety and health rules/procedures.
OJ003 Identify hazardous substances in the workplace.
OJ005 Identify methods of preventing accidents in the workplace.
OJ006 Assume responsibility for the personal safety of self and others.
OJ007 Report unsafe practices to appropriate personnel.
OM003 Demonstrate the ability to safely operate basic agriculture equipment.

Learning Targets
- Measure various objects using a variety of measuring instruments
  - Link: http://themathworksheetsite.com/read_tape.html
  - Create a list of items around the room. Have students practice measuring them.
- Evaluate the importance and effects of GIS and GPS on the future of the agricultural industry
  - Document: GPS Lesson Plan (Colorado)
- Create a materials list for a building project
  - File: Bird house design
- Create a sketch, scaled drawing, and materials list for a bird house
  - File: Can you build it blue bird house plan

Sample Learner Activities
- Click in the box to go to Activities

Technical Literacy Standards
Integration of Knowledge and Ideas - 9-10 - Translate quantitative or technical information expressed in words in a text into visual form
Craft and Structure - 9-10 - Determine the meaning of symbols, terms, and domain-specific words or phrases
Text Types and Purpose - 9-10 - Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes
Principles of Agriculture Science and Technology

This course provides instruction in the foundations of the various segments of the agricultural industry. Agricultural career opportunities will be emphasized. Animal science, plant and land science, and agricultural mechanics skills will be the focus of the curriculum. The selection and planning of a supervised agricultural experience program and related record keeping will be presented. Leadership development will be provided through FFA. Students will receive personal guidance and counseling with preparatory instructional program selection.

Environmental Science

Principles of Agriculture Science and Technology

This course provides instruction in the foundations of the various segments of the agricultural industry. Agricultural career opportunities will be emphasized. Animal science, plant and land science, and agricultural mechanics skills will be the focus of the curriculum. The selection and planning of a supervised agricultural experience program and related record keeping will be presented. Leadership development will be provided through FFA. Students will receive personal guidance and counseling with preparatory instructional program selection.

Prerequisites

None

Unit Title

Environmental Science

Technical Content

7-Investigate basic environmental, food, and fiber interrelationships

KY Core Academic Standards (Big Idea)

Biological Change (Biological Science) - Science
The only thing certain is that everything changes. At the high school level, students evaluate the role natural selection plays in the diversity of species. Modern ideas of evolution provide a scientific explanation for three main sets of observable facts about life on Earth: the enormous number of different life forms we see about us, the systematic similarities in anatomy and molecular chemistry we see within that diversity, and the sequence of changes in fossils found in successive layers of rock that have been formed over more than a billion years.

Unity and Diversity (Biological Science) - Science
All matter is comprised of the same basic elements, goes through the same kinds of energy transformations, and uses the same kinds of forces to move. Living organisms are no exception. At the high school level, an in-depth study of the specialization and chemical changes occurring at the cellular level builds upon the foundational ideas developed earlier to investigate deoxyribonucleic acid (DNA) and effects of alterations in DNA for an individual organism as well as for a species. Emphasis at every level should be placed upon the understanding that while every living thing is composed of similar small constituents that combine in predictable

Career Awareness, Exploration, Planning - Vocational Studies
Career awareness, exploration and planning gives students the opportunity to discover the various career areas that exist and introduce them to the realities involved with the workplace. Many factors need to be considered when selecting a career path and preparing for employment. Career awareness, exploration and planning will enable students to recognize the value of education, learn how to plan for careers and integrate academic subjects.

English/Language Arts Common Core Standards

CC.9-10.W.2 Text Types and Purposes: Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

CC.9-10.W.8 Research to Build and Present Knowledge: 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.

Mathematics Common Core Standards

CC.9-12.A.CED.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.*

CC.9-12.A.REI.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

21st Century Skills and Knowledge

Financial, Economic, Business and Entrepreneurial Literacy
Environmental Literacy
Civic Literacy
Health Literacy
Critical Thinking and Problem Solving
Communication
Collaboration
Information Literacy
ICT (Information, Communications, and Technology) Literacy
Flexibility and Adaptability
KOSSA Standards
AC005 Be aware of biotechnology and its uses in production agriculture.
AC006 Explain the use of applied genetics in plants and animals.
AC004 Analyze the process of plant and animal growth and development.
OC001 Apply use of related electronic technology (e-mail, computer applications, GPS, precision farming, ultrasound, electronic ear tags, and computer feeding).
OC004 Maintain awareness of current trends in production agriculture through industry associations, trade journals, and internet resources.

Learning Targets
- Analyze water samples for pollutants; Evaluate the pollutants potential impacts on the ecosystem
- Recognize the types of erosion; Evaluate the causes and effects of erosion
- Develop connections between biotic and abiotic factors in an ecosystem

Sample Learner Activities
- Document: Erosion Lab (website link to kit included in the document)
- File: Oh Deer

Technical Literacy Standards
Craft and Structure - 9-10 - Determine the meaning of symbols, terms, and domain-specific words or phrases
Key Ideas and Details - 9-10 - Cite specific evidence to support analysis of text
Text Types and Purpose – 9-10 – Write arguments focused on discipline-specific content
Course Title  | Principles of Agriculture Science and Technology  
Grade Levels  | 9th  
Credit Value  | 1  

This course provides instruction in the foundations of the various segments of the agricultural industry. Agricultural career opportunities will be emphasized. Animal science, plant and land science, and agricultural mechanics skills will be the focus of the curriculum. The selection and planning of a supervised agricultural experience program and related record keeping will be presented. Leadership development will be provided through FFA. Students will receive personal guidance and counseling with preparatory instructional program selection.

Prerequisites  
None

Unit Title  
Agriculture Innovations

Technical Content
1- Demonstrate employability and social skills relative to the career cluster.
3- Explore basic agricultural skills needed including math, communications, and employability skills
7- Investigate basic environmental, food and fiber interrelationships

English/Language Arts Common Core Standards
CC.9-10.R.I.8 Integration of Knowledge and Ideas: Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.
CC.9-10.SL.1 Comprehension and Collaboration: 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.
CC.9-10.SL.1.c Comprehension and Collaboration: Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions.
CC.9-10.SL.4 Presentation of Knowledge and Ideas: 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.

21st Century Skills and Knowledge
Financial, Economic, Business and Entrepreneurial Literacy
Civic Literacy
Health Literacy
Environmental Literacy
Creativity and Innovation
Critical Thinking and Problem Solving
Communication
Information Literacy
Media Literacy
ICT (Information, Communications, and Technology) Literacy
**KOSSA Standards**
AC005 Be aware of biotechnology and its uses in production agriculture.
OC003 Interpret the input of local, state, national, and international economy to production agriculture.

**Learning Targets**

<table>
<thead>
<tr>
<th>Sample Learner Activities</th>
<th>Click in the box to go to Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compare and contrast the use of ethanol and kerosene</td>
<td>File: Comparing two fuels</td>
</tr>
<tr>
<td>Debate pros and cons of various agriculture issues</td>
<td>Set up a class debate. Use this link to find some great topics: <a href="http://web.ics.purdue.edu/~peters/HTML/home.html">http://web.ics.purdue.edu/~peters/HTML/home.html</a></td>
</tr>
<tr>
<td>Produce cheese following a lab procedure</td>
<td>File: Cheese production</td>
</tr>
</tbody>
</table>

**Technical Literacy Standards**
Integration of Knowledge and Ideas - 9-10 - Translate quantitative or technical information expressed in words in a text into visual form
Key Ideas and Details - 9-10 - Cite specific evidence to support analysis of text
Text Types and Purpose - 9-10 - Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes