

Career & Technical Education

**Animal Science**

# AGRICULTURAL CAREER CLUSTER

## CAREER MAJORS/CAREER PATHWAYS

<b>Animal Science Systems</b>
Agriscience Exploration (7 <sup>th</sup> -8 <sup>th</sup> Grade) - (no credit toward career major)
Recommended Courses
<b>Principles of Agricultural Science &amp; Technology</b> <b>Agriscience</b> <b>Animal Science</b> <b>Animal Technology</b> <b>Equine Science</b> <b>Adv. Animal Science</b> <b>Small Animal Tech</b> <b>Veterinary Science</b>
Elective Courses
Ag. Math Food Science & Technology Food Processing, Dist. & Mkt. Aquaculture Ag. Sales and Marketing Ag. Construction Skills Ag. Power & Machinery Operation Agri-Biology Adv. Ag. Economics and Agribusiness Ag. Business/Farm Mgmt Ag. Employability Skills <ul style="list-style-type: none"> <li>• Leadership Dynamics</li> <li>• Business Management</li> <li>• Marketing Management</li> </ul> * Other Career and Technical Education Courses

- Other Career and Technical Education courses directly related to the student’s Career Major/Career Pathway.
- “Bolted” 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.

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.

# KENTUCKY CAREER PATHWAY/PROGRAM OF STUDY TEMPLATE

**COLLEGE/UNIVERSITY:** \_\_\_\_\_  
**HIGH SCHOOL (S):** \_\_\_\_\_  
 \_\_\_\_\_

**CLUSTER:** Agriculture, Food, and Natural Resources  
**PATHWAY:** Animal Science Systems  
**PROGRAM:** Agricultural Education

	GRADE	ENGLISH	MATH	SCIENCE	SOCIAL STUDIES	REQUIRED COURSES			CREDENTIAL CERTIFICATE DIPLOMA DEGREE
						RECOMMENDED ELECTIVE COURSES	OTHER ELECTIVE COURSES	CAREER AND TECHNICAL EDUCATION COURSES	
<b>SECONDARY</b>	9	△ English 1	△ Alegbra 1	△ Earth Science	△ Survey of SS	△ Health/PE	Principles of Ag. ☆		
	10	△ English 2	△ Geometry	△ Biology	△ World Civ.	△ Humanities	Agriscience Or Animal Science ☆		
	11	△ English 3	△ Alegbra 2	△ Chemistry	△ US History	☞ Foreign Lan.	Small Animal or Animal Science ☆	☆ Equine Science	
	12	△ English 4	△ 4th math*	☞ Anatomy/ Physiology		☞ Foreign Lan.	☾ ☆ Adv. Animal	Vet Tech or Animal Tech ☆	☾ Skill Stds Assmt- Animal
				* Pre Cal Rec. for College					
<b>POSTSECONDARY</b>	Year 13	Writing	Math	Chemistry + Labs	Humanities	Animal Science	Agronomy	Area or Specialization Course	
	Year 14	Writing		Biology	Social Sciences	Area or Specialization Course	Area or Specialization Course	Area or Specialization Course	
	Year 15			Organic Chemistry		Animal Nutrition	Production Courses	Area or Specialization Course	
	Year 16					Capstone/Sr. Seminar Class	Area or Specialization Course	Area or Specialization Course	BS Degree

 **CCTI**  
 FOR INNOVATION IN THE COMMUNITY COLLEGE College and Career Transitions Initiative  
 Funded by the U. S. Department of Education (V051B020001)  
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<b>Required Courses</b> △
<b>Recommended Elective Courses</b> ☆
<b>Other Elective Courses</b> ☞
<b>Career and Technical Education Courses</b> ☞
<b>Credit-Based Transition Programs (e.g. Dual/Concurrent Enrollment, Articulated Courses, 2+2+2)</b> (◆ = High School to Comm. College) (● = Com. College to 4-Yr Institution) (■ = Opportunity to test out) ☾
<b>Mandatory Assessments, Advising, and Additional Preparation</b> ☒

**Note:** Categories of courses (e.g. Required, Recommended Electives, other Electives and career and Technical Education) apply to both secondary and postsecondary levels.

## Animal Science

**Course Description:** Animal Science develops basic knowledge and skills pertaining to livestock identification, selection, nutrition, reproduction and genetics, health management, and marketing of one or more species of farm animals. The latest biotechnological applications will be included. The content may be enhanced with appropriate computer applications. Leadership development will be provided through FFA. Each student will be expected to have a supervised agricultural experience program.

Academic Expectations	Content/Process
1	<p><b>Students will</b></p> <ul style="list-style-type: none"> <li>• demonstrate employability and social skills relative to the career cluster.</li> </ul>
2	<ul style="list-style-type: none"> <li>• relate the benefits of animals to human kind in local, national and world agriculture.</li> </ul>
3	<ul style="list-style-type: none"> <li>• utilize proper animal science terminology.</li> </ul>
4	<ul style="list-style-type: none"> <li>• distinguish various breeds of livestock.</li> </ul>
5	<ul style="list-style-type: none"> <li>• select and evaluate livestock.</li> </ul>
6	<ul style="list-style-type: none"> <li>• apply reproductive principles to breeding practices of livestock.</li> </ul>
7	<ul style="list-style-type: none"> <li>• summarize digestive principles to livestock nutrition practices.</li> </ul>
8	<ul style="list-style-type: none"> <li>• evaluate proper animal health techniques in the livestock industry.</li> </ul>
9	<ul style="list-style-type: none"> <li>• apply biotechnological principles to the livestock industry.</li> </ul>
10	<ul style="list-style-type: none"> <li>• relate animal agriculture to the environment.</li> </ul>
11	<ul style="list-style-type: none"> <li>• evaluate animal products and by-products of the livestock industry.</li> </ul>
12	<ul style="list-style-type: none"> <li>• maintain records on supervised agricultural experience program and be able to summarize and analyze results in making financial decisions.</li> </ul>
13	<ul style="list-style-type: none"> <li>• utilize activities of FFA as an integral component of course content and leadership development.</li> </ul>
14	<ul style="list-style-type: none"> <li>• apply science, math and communication skills within the technical content.</li> </ul>
<p><b>Connections</b></p> <ul style="list-style-type: none"> <li>• Kentucky Occupational Skill Standards</li> <li>• Secretary’s Commission on Achieving Necessary Skills (SCANS)</li> <li>• National Council for Agriculture Education Skill Standards in Bio-Technology</li> </ul>	

## Animal Science Course Outline

Unit	Topics	Lesson	Activity	Learning Targets
<b>Industry Overview</b> 10 Days	Local to global Ag	World Impact of agriculture	Where in the World? (Country research of agriculture) Up Down Statistics (Local or state)	Evaluate effects of agriculture from local to global
	Hunger	Food in our World	Who Gets the Cookie?	Investigate relationship of world hunger and agriculture
	Trends and Statistics	Commodities in Agriculture	Graph Interpretation of USDA Meat Consumption	Interpret graphic information and analyze cause & effects
	Economics	Supply and Demand	Candy Game	Differentiate between supply and demand and the impact it has on the agriculture industry
<b>Selection and Evaluation</b> 3 days	Conformation	Terminology	Judging Classes	Comprehend the importance of conformation in livestock species
	Defense of Position	Reasons	Judging Classes	Judge various livestock classes and justify the placement of animals.
<b>Genetics and Reproduction</b> 16 Days	Reproductive Anatomy	Parts of the Reproductive System	Anatomy Diagrams; System Dissection	Diagram the reproductive system of livestock animals
	Reproductive Physiology	Functions of the reproductive System	Breeding Calendar	Compare and contrast the cycles within the reproductive tract and the functions of hormones in those cycles.
	Breeding Methods	Natural Breeding; AI; ET; Selective Breeding; cross-breeding; pure-breeding; in-line breeding	Scenario Response	Evaluate the different breeding methods according to various livestock operations.
	Genetics	Genetics Role in Reproduction	Punnett Square	Predict outcome of genetic offspring using Punnett squares
	EPD's	Balancing EPD's	Match Maker	Explain and interpret the importance of EPD's
<b>Health</b> 5 Days	Diseases	Identify and Treat Diseases in Livestock Industries	Case Study	Diagnose symptoms of disease in livestock. Develop a treatment plan for a disease.
	Pest & Parasites	What's eating you?	Pest research; Parasite slide eval; Fecal float	Classify parasites. Sketch parasites seen under a microscope.
	Vaccinations and Sanitation	Preventative Maintenance	Giving shots in an orange/chicken breast	Evaluate the impact proper sanitation practices have on animal health. Identify proper techniques for vaccinating animals to improve performance
<b>Nutrition and Digestion</b> 16 Days	Feeds (roughages & concentrates)	What's in your feed bucket?	Nutrient ID, Feed stuff ID, Research nutrient needs of an animal	Classify feed and nutrients. Create and analyze a feed ration.
	Digestive Systems	Monogastrics and Ruminants	Dissect or Diagram an Animal Digestive System	
	Feed Management	Create a Ration	Pearson Square, Online Ration Calculator	
	Issues in Digestion	Deficiencies and Toxicities	Research nutritional problems in a species	
<b>Animal Issues</b> 5 Days	Sustainability			
	Rights & Welfare			Debate the viewpoints of animal rights activists and animal welfare supporters
	Waste Management			Identify various waste management systems that effectively protect the environment
	Social Issues			Explain how the impact society has on animals.
<b>Animal Management</b> 15 Days	Facilities	The Cow Whisperer	Beyond the Rain Man (Article) Anticipated Reading Guide	Distinguish between safe and unsafe animal handling facilities.
	Production Methods		Facility Design for Species	Differentiates between the methods used for animal production.
	Health Management	What's The Score?	Body Condition Scoring	Evaluate health of animals using visual examination.
	Animal ID			Explain the importance of animal identification.

<b>Products and Marketing 10 Days</b>	Uses of Animals Including Byproducts			Evaluate the impact animal byproducts have on your everyday life.
	Meats	Meet your meat	Locate and compare taste and texture of similar cuts of meet	
	Marketing and Selling Animals and Animal Products	Buying and Selling Animals	Market Your Product	Create a marketing plan for an animal enterprise.

Course Title **Animal Science**

Grade Levels 11-12

Credit Value 1 or 2

Description Animal Science develops basic knowledge and skills pertaining to livestock identification, selection, nutrition, reproduction and genetics, health management, and marketing of one or more species of farm animals. The latest biotechnological applications will be included. The content may be enhanced with appropriate computer applications. Leadership development will be provided through FFA. Each student will be expected to have a supervised agricultural experience programs.

Prerequisites Agriscience

Unit Title Industry Overview

### **Technical Content**

2- Relate the benefits of animals to human kind in local, national, and world agriculture.

3- Utilize proper animal science terminology.

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

Cultures and Societies - Social Studies

Culture is the way of life shared by a group of people, including their ideas and traditions. Cultures reflect the values and beliefs of groups in different ways (e.g., art, music, literature, religion); however, there are universals (e.g., food, clothing, shelter, communication) connecting all cultures. Culture influences viewpoints, rules and institutions in a global society. Students should understand that people form cultural groups throughout the United States and the World, and that issues and challenges unite and divide them.

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 Standards**

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.

CC.11-12.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.11-12.R.I.7 Integration of Knowledge and Ideas: Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.

### **21st Century Skills and Knowledge**

Flexibility and Adaptability

Initiative and Self-Direction

Global Awareness

Financial, Economic, Business and Entrepreneurial Literacy

Civic Literacy

Health Literacy

Creativity and Innovation

Critical Thinking and Problem Solving

Environmental Literacy

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).

OC003 Interpret the input of local, state, national, and international economy to production agriculture.

OC004 Maintain awareness of current trends in production agriculture through industry associations, trade journals, and internet resources.

OF002 Calculate break-even prices.

OL003 Use appropriate agricultural terminology.

OH006 Understand agriculture's relationship and responsibility to guarantee a safe food supply and a healthy environment.

## **Learning Targets**

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

Evaluate effects of agriculture from local to global.

-Link: <https://www.ffa.org/FFAResources/Educators/TCTL/Pages/default.aspx#>

-Document: Stats Up Down Game

Investigate relationship between world hunger and agriculture.

-Document: World Hunger Cookie Game

Interpret graphic information and analyze cause and effects.

-File: Meat Consumption Trends

Differentiate between supply and demand and the impact it has on the agriculture industry.

-Document: Supply and Demand Activities

## **Technical Literacy Standards**

Key Ideas and Details – 11-12 – Determine central ideas or conclusions of a text; summarize complex concepts

Craft and Structure – 11-12 – Determine meaning of symbols, key terms, and other domain-specific words and phrases

Integration of Knowledge and Ideas – 11-12 – Evaluate the hypotheses, data analysis, and conclusions in scientific and/or technical text

Text Types and Purposes – 11-12 – Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes

Course Title **Animal Science**

Grade Levels 11-12

Credit Value 1 or 2

Description Animal Science develops basic knowledge and skills pertaining to livestock identification, selection, nutrition, reproduction and genetics, health management, and marketing of one or more species of farm animals. The latest biotechnological applications will be included. The content may be enhanced with appropriate computer applications. Leadership development will be provided through FFA. Each student will be expected to have a supervised agricultural experience programs.

Prerequisites Agriscience

Unit Title Livestock Selection and Evaluation

### **Technical Content**

4- Distinguish breeds of livestock.

5- Select and evaluate livestock.

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

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 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.11-12.L.1 Conventions of Standard English: Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

CC.11-12.L.6 Vocabulary Acquisition and Use: Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

### **21st Century Skills and Knowledge**

Health Literacy

Creativity and Innovation

Communication

Collaboration

Critical Thinking and Problem Solving

Leadership and Responsibility

ICT (Information, Communications, and Technology) Literacy

Productivity and Accountability

Media Literacy

## **KOSSA Standards**

OA003 Utilize appropriate livestock selection techniques.

OA004 Understand principles of reproductive physiology and utilization of appropriate technology (synchronization, artificial insemination, embryo transfer).

AA014 Organize and deliver a persuasive oral presentation.

AA015 Demonstrate proper speaking and presentation characteristics.

OL003 Use appropriate agricultural terminology.

OL004 Identify the anatomical parts of domestic livestock.

## **Learning Targets**

Comprehend the importance of conformation in livestock species.

Judge various livestock classes and justify the placement of animals.

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

-UK Extension has a called Livestock Discovery which make teaching livestock judging/conformation fairly easy. It is only \$3. The link for the order form is <http://www.uky.edu/Ag/AnimalSciences/4h/orderformforlivestockdiscoverycd.pdf>

-Link: [http://msucares.com/4h\\_Youth/4hlivestock/judging/index.html](http://msucares.com/4h_Youth/4hlivestock/judging/index.html)

-Link: <http://livestock.colostate.edu/youth/judging/index.html>

-Document (PowerPoint): Dairy Judging

## **Technical Literacy Standards**

Key Ideas and Details – 11-12 – Cite specific textual evidence to support analysis of text

Craft and Structure – 11-12 – Determine meaning of symbols, key terms, and other domain-specific words and phrases

Integration of Knowledge and Ideas – 11-12 – Synthesize information from a range of sources

Course Title **Animal Science**

Grade Levels 11-12

Credit Value 1 or 2

Description Animal Science develops basic knowledge and skills pertaining to livestock identification, selection, nutrition, reproduction and genetics, health management, and marketing of one or more species of farm animals. The latest biotechnological applications will be included. The content may be enhanced with appropriate computer applications. Leadership development will be provided through FFA. Each student will be expected to have a supervised agricultural experience programs.

Prerequisites Agriscience

Unit Title **Animal Genetics and Reproduction**

### **Technical Content**

6- Apply reproductive principles to breeding practices of livestock.

9- Apply biotechnological principles to the livestock industry.

### **KY 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 Standards**

CC.11-12.L.6 Vocabulary Acquisition and Use: Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

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.9 Research to Build and Present Knowledge: Draw evidence from literary or informational texts to support analysis, reflection, and research.

CC.11-12.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.7 Research to Build and Present Knowledge: 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.

### **21st Century Skills and Knowledge**

Critical Thinking and Problem Solving

Financial, Economic, Business and Entrepreneurial Literacy

Creativity and Innovation

Leadership and Responsibility

ICT (Information, Communications, and Technology) Literacy

Productivity and Accountability

Communication

Collaboration

Media Literacy

## **KOSSA Standards**

OA004 Understand principles of reproductive physiology and utilization of appropriate technology (synchronization, artificial insemination, embryo transfer).

OA002 Apply principles of health management.

OA003 Utilize appropriate livestock selection techniques.

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

OI001 Utilize appropriate production techniques for livestock (beef cattle, dairy cattle, swine, horses,

OL003 Use appropriate agricultural terminology.

OL004 Identify the anatomical parts of domestic livestock.

## **Learning Targets**

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

Diagram the reproductive system of livestock animals.

-Document: Animal Anatomy Diagram

Compare and contrast the cycles within the reproductive tract and the functions of hormones in those cycles.

-File: Breeding Calendar

Evaluate the different breeding methods according to various livestock operations.

-Document: Breeding Scenario Response

Predict outcomes of genetic offspring using Punnett Squares.

-Document: Punnett Square Practice

Explain and interpret the importance of EPD's.

-File: EPD Match Maker

## **Technical Literacy Standards**

Key Ideas and Details – 11-12 – Follow precisely a complex multistep procedure

Craft and Structure – 11-12 – Determine meaning of symbols, key terms, and other domain-specific words and phrases

Integration of Knowledge and Ideas – 11-12 – Evaluate the hypotheses, data analysis, and conclusions in scientific and/or technical text

Text Types and Purposes – 11-12 – Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes

Course Title **Animal Science**

Grade Levels 11-12

Credit Value 1 or 2

Description Animal Science develops basic knowledge and skills pertaining to livestock identification, selection, nutrition, reproduction and genetics, health management, and marketing of one or more species of farm animals. The latest biotechnological applications will be included. The content may be enhanced with appropriate computer applications. Leadership development will be provided through FFA. Each student will be expected to have a supervised agricultural experience programs.

Prerequisites Agriscience

Unit Title Animal Health

### **Technical Content**

8- Evaluate proper animal health techniques in the livestock industry.

### **KY 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.

### **English/Language Arts 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.

CC.11-12.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.11-12.W.9 Research to Build and Present Knowledge: Draw evidence form literary or informational texts to support analysis, reflection, and research.

### **21st Century Skills and Knowledge**

Financial, Economic, Business and Entrepreneurial Literacy

Health Literacy

Environmental Literacy

Creativity and Innovation

Critical Thinking and Problem Solving

Leadership and Responsibility

ICT (Information, Communications, and Technology) Literacy

Productivity and Accountability

Communication

Collaboration

## **KOSSA Standards**

OA002 Apply principles of health management.

OE003 Maintain an awareness of risk management practices (crop insurance).

OA003 Utilize appropriate livestock selection techniques.

OC001 Apply use of related electronic technology (e-mail, computer applications, GPS, precision farming, ultrasound, electronic ear tags, and computer feeding).

OC003 Interpret the input of local, state, national, and international economy to production agriculture.

OC004 Maintain awareness of current trends in production agriculture through industry associations, trade journals, and internet resources.

OE001 Maintain an awareness of world trade issues (GMO's, drought, trade agreements)

OF003 Calculate proper medicine dosages.

OH001 Demonstrate effective pest management practices.

OH002 Recognize common plant and animal diseases.

OH003 Apply appropriate prevention techniques and treatments of plant and animal diseases.

OH004 Utilize understanding of plant and animal nutrition in the management and prevention of diseases.

OH005 Utilize understanding of varieties and breeds in the management and prevention of diseases

OH006 Understand agriculture's relationship and responsibility to guarantee a safe food supply and a healthy environment.

OL003 Use appropriate agricultural terminology.

OL004 Identify the anatomical parts of domestic livestock.

OL005 Demonstrate knowledge of livestock breeds.

OL006 Demonstrate knowledge of the livestock carcass.

OL007 Recognize livestock pests.

## **Learning Targets**

Diagnose symptoms of disease in livestock. Develop a plan for treatment of a disease.

Classify parasites. Sketch parasites seen under a microscope.

Evaluate the impact proper sanitation practices have on animal health. Identify proper techniques for vaccinating animals to improve performance.

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

-Pair students up, have them research a specific ag disease. Then have them write a case scenario for an animal that has been infected with their disease. Have the students turn in their scenarios. Give the partners a new scenario and have them research what the potential disease could be based off of the symptoms. Then have the students give the symptoms and diagnosis to the class. The group who wrote the scenario can tell if they are correct or not and why. Class can discuss common symptoms and difficulties that might arise based off of the common symptoms. Have the students create a treatment plan based off of the correct diagnosis.

-Document: Fecal Float

-File: Orange injection lab

## **Technical Literacy Standards**

Key Ideas and Details – 11-12 – Determine central ideas or conclusions of a text; summarize complex concepts

Craft and Structure – 11-12 – Determine meaning of symbols, key terms, and other domain-specific words and phrases

Text Types and Purposes – 11-12 – Write arguments focused on discipline-specific content

Research to Build and Present Knowledge – 11-12 – Draw evidence from informational text to support analysis, reflection, and research

Course Title **Animal Science**

Grade Levels 11-12

Credit Value 1 or 2

Description Animal Science develops basic knowledge and skills pertaining to livestock identification, selection, nutrition, reproduction and genetics, health management, and marketing of one or more species of farm animals. The latest biotechnological applications will be included. The content may be enhanced with appropriate computer applications. Leadership development will be provided through FFA. Each student will be expected to have a supervised agricultural experience programs.

Prerequisites Agriscience

Unit Title **Nutrition and Digestion**

### **Technical Content**

7- Summarize digestive principles to livestock nutrition practices.

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

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 Standards**

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.

CC.11-12.SL.4 Presentation of Knowledge and Ideas: 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 or formal and informal tasks.

CC.11-12.L.6 Vocabulary Acquisition and Use: Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

### **Mathematics 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.\*

### **21st Century Skills and Knowledge**

Health Literacy

Creativity and Innovation

Critical Thinking and Problem Solving

Leadership and Responsibility

ICT (Information, Communications, and Technology) Literacy

Productivity and Accountability

Collaboration

Communication

Media Literacy

## **KOSSA Standards**

OA001 Apply principles of livestock nutrition.

OA002 Apply principles of health management.

OA004 Understand principles of reproductive physiology and utilization of appropriate technology (synchronization, artificial insemination, embryo transfer).

OC001 Apply use of related electronic technology (e-mail, computer applications, GPS, precision farming, ultrasound, electronic ear tags, and computer feeding).

OB005 Identify appropriate techniques for harvesting and storage of crops.

OF004 Formulate and evaluate rations.

OH004 Utilize understanding of plant and animal nutrition in the management and prevention of diseases.

OI001 Utilize appropriate production techniques for livestock (beef cattle, dairy cattle, swine, horses,

OL003 Use appropriate agricultural terminology.

OL004 Identify the anatomical parts of domestic livestock.

OM001 Identify needs of livestock, crop, and equipment storage.

OF008 Analyze rations (fertilizer).

## **Learning Targets**

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

Classify feed and nutrients.

-Document: Next Generation Nutrition LP (I need to email this still~ Lindsey D)

Create and analyze a feed ration.

-Document: Caloric Lab (Colorado)

Formulate a livestock feed using Pearson Square and an online feed ration.

-This one will have activities from the Nutrition Lesson Plan from Learning Target 1.

Distinguish between monogastric and ruminant digestive tracts. Identify major parts and functions of each systems.

-Document: Monogastric Digestive Tract Travel Brochure

-Document: Digestion (Colorado)

Understand how nutritional disorders are developed and diagnoses are made.

-Present 4 nutritional disorders in a species to the class. Create a chart that outlines symptoms and causes of each of the disorders presented by the chart.

## **Technical Literacy Standards**

Craft and Structure – 11-12 – Determine meaning of symbols, key terms, and other domain-specific words and phrases

Integration of Knowledge and Ideas – 11-12 – Evaluate the hypotheses, data analysis, and conclusions in scientific and/or technical text

Text Types and Purposes – 11-12 – Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes

Research to Build and Present Knowledge – 11-12 – Draw evidence from informational text to support analysis, reflection, and research

Course Title	<b>Animal Science</b>	Grade Levels	11-12	Credit Value	1 or 2
Description	Animal Science develops basic knowledge and skills pertaining to livestock identification, selection, nutrition, reproduction and genetics, health management, and marketing of one or more species of farm animals. The latest biotechnological applications will be included. The content may be enhanced with appropriate computer applications. Leadership development will be provided through FFA. Each student will be expected to have a supervised agricultural experience programs.				
Prerequisites	Agriscience				
Unit Title	<u><b>Animal Agriculture Issues</b></u>				

### **Technical Content**

- 1- Demonstrate employability and social skills relative to the career cluster.
- 10- Relate animal agriculture to the environment.
- 14- Apply science, math, and communication skills within the technical content.

### **English/Language Arts Standards**

- CC.11-12.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.11-12.W.7 Research to Build and Present Knowledge: 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.
- CC.11-12.W.9 Research to Build and Present Knowledge: Draw evidence from literary or informational texts to support analysis, reflection, and research.
- CC.11-12.W.8 Research to Build and Present Knowledge: 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.
- CC.11-12.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**

- Civic Literacy
- Environmental Literacy
- Creativity and Innovation
- Critical Thinking and Problem Solving
- Leadership and Responsibility
- ICT (Information, Communications, and Technology) Literacy
- Productivity and Accountability
- Communication
- Collaboration
- Information Literacy

## **KOSSA Standards**

- OA004 Understand principles of reproductive physiology and utilization of appropriate technology (synchronization, artificial insemination, embryo transfer).
- OC001 Apply use of related electronic technology (e-mail, computer applications, GPS, precision farming, ultrasound, electronic ear tags, and computer feeding).
- OC003 Interpret the input of local, state, national, and international economy to production agriculture.
- OC004 Maintain awareness of current trends in production agriculture through industry associations, trade journals, and internet resources.
- OE001 Maintain an awareness of world trade issues (GMO's, drought, trade agreements)
- OG001 Develop and understanding of related legal, financial, and labor issues.
- OG002 Demonstrate an understanding of the issues related to utilizing immigrant labor.
- OK001 Demonstrate an understanding of state and federal agricultural legislation (farm bill).
- OK002 Demonstrate an understanding of agricultural law (border disputes, incorporation, liability issues, injury claims, attractive nuisance, farming in populated areas).
- OL003 Use appropriate agricultural terminology.
- OM001 Identify needs of livestock, crop, and equipment storage.
- OM002 Calculate and analyze cost of storage.

## **Learning Targets**

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

Debate the viewpoints of animal rights activists and animal welfare supporters.

-File: Animal right\_welfare debate

Identify various waste management systems that effectively protect the environment.

-File: Evaluating Waste Management System

-File: Poo Pot Maker...

## **Technical Literacy Standards**

Research to Build and Present Knowledge – 11-12 – Gather relevant information from multiple authoritative print and digital sources

Text Types and Purposes – 11-12 – Write arguments focused on discipline-specific content

Integration of Knowledge and Ideas – 11-12 – integrate and evaluate multiple sources of information

Key Ideas and Details – 11-12 – Determine central ideas or conclusions of a text; summarize complex concepts

Course Title **Animal Science**

Grade Levels 11-12

Credit Value 1 or 2

Description Animal Science develops basic knowledge and skills pertaining to livestock identification, selection, nutrition, reproduction and genetics, health management, and marketing of one or more species of farm animals. The latest biotechnological applications will be included. The content may be enhanced with appropriate computer applications. Leadership development will be provided through FFA. Each student will be expected to have a supervised agricultural experience programs.

Prerequisites Agriscience

Unit Title Animal Management

### **Technical Content**

3- Utilize proper animal science terminology.

6- Apply reproductive principles to breeding practices of livestock.

7- Summarize digestive principles to livestock nutrition practices.

8- Evaluate proper animal health techniques to the livestock industry.

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

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.

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.

### **English/Language Arts Standards**

CC.11-12.R.I.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, including determining where the text leaves matters uncertain.

CC.11-12.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.11-12.L.6 Vocabulary Acquisition and Use: Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

### **Mathematics 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.\*

### **21st Century Skills and Knowledge**

Environmental Literacy

Creativity and Innovation

Critical Thinking and Problem Solving

Leadership and Responsibility

ICT (Information, Communications, and Technology) Literacy

Productivity and Accountability

Communication

Collaboration

Media Literacy

## **KOSSA Standards**

OA002 Apply principles of health management.

OA003 Utilize appropriate livestock selection techniques.

OA004 Understand principles of reproductive physiology and utilization of appropriate technology (synchronization, artificial insemination, embryo transfer).

OB005 Identify appropriate techniques for harvesting and storage of crops.

OC001 Apply use of related electronic technology (e-mail, computer applications, GPS, precision farming, ultrasound, electronic ear tags, and computer feeding).

OC003 Interpret the input of local, state, national, and international economy to production agriculture.

OC004 Maintain awareness of current trends in production agriculture through industry associations, trade journals, and internet resources.

OD003 Understand requirements for and sources of credit.

OD004 Understand procedures related to buying, leasing, and renting land and/or equipment.

OM001 Identify needs of livestock, crop, and equipment storage.

OE003 Maintain an awareness of risk management practices (crop insurance).

OG001 Develop and understanding of related legal, financial, and labor issues.

OG002 Demonstrate an understanding of the issues related to utilizing immigrant labor.

OG003 Demonstrate effective and efficient delegation of labor.

OK001 Demonstrate an understanding of state and federal agricultural legislation (farm bill).

OK002 Demonstrate an understanding of agricultural law (border disputes, incorporation, liability issues, injury claims, attractive nuisance, farming in populated areas).

OL003 Use appropriate agricultural terminology.

OL004 Identify the anatomical parts of domestic livestock.

OM002 Calculate and analyze cost of storage.

OL006 Demonstrate knowledge of the livestock carcass.

OL007 Recognize livestock pests.

## **Learning Targets**

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

Distinguish between safe and unsafe animal handling facilities.

-Document: Beyond the Rain Man Reading Anticipation Guide

Differentiate between the methods used for animal production.

-Link: <http://www.isd743.k12.mn.us/Agtivitybook/Animalscience/AnimalHousingActivity.pdf>

Evaluate health of animals using visual examination.

-Document: How to Condition Score Horses

-Document (Power Point): Body Condition Score

-Document: Condition Score Test

Explain the importance of animal identification.

-Document: NAIS Activity

## **Technical Literacy Standards**

Key Ideas and Details – 11-12 – Follow precisely a complex multistep procedure

Craft and Structure – 11-12 – Determine meaning of symbols, key terms, and other domain-specific words and phrases

Integration of Knowledge and Ideas – 11-12 – Evaluate the hypotheses, data analysis, and conclusions in scientific and/or technical text

Research to Build and Present Knowledge – 11-12 – Conduct short as well as more sustained research projects to answer a question

Course Title **Animal Science**

Grade Levels 11-12

Credit Value 1 or 2

Description Animal Science develops basic knowledge and skills pertaining to livestock identification, selection, nutrition, reproduction and genetics, health management, and marketing of one or more species of farm animals. The latest biotechnological applications will be included. The content may be enhanced with appropriate computer applications. Leadership development will be provided through FFA. Each student will be expected to have a supervised agricultural experience programs.

Prerequisites Agriscience

Unit Title **Animal Products and Marketing**

### **Technical Content**

11- Evaluate animal products and by-products of the livestock industry.

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

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.

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 Standards**

CC.11-12.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.11-12.W.8 Research to Build and Present Knowledge: 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.

CC.11-12.L.2 Conventions of Standard English: Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

CC.11-12.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.

### **21st Century Skills and Knowledge**

Financial, Economic, Business and Entrepreneurial Literacy

Creativity and Innovation

Critical Thinking and Problem Solving

Leadership and Responsibility

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).

OC003 Interpret the input of local, state, national, and international economy to production agriculture.

OC004 Maintain awareness of current trends in production agriculture through industry associations, trade journals, and internet resources.

OD003 Understand requirements for and sources of credit.

OD004 Understand procedures related to buying, leasing, and renting land and/or equipment.

OD005 Understand issues related to tax records and filing taxes.

OE002 Maintain an awareness of strategies relating to futures, forward cash contracts, and storage.

OE004 Explore marketing resources (marketing clubs, extension programs, brokers, consultants).

OE005 Demonstrate knowledge of specialty agriculture markets (e.g. tobacco, aquaculture, etc.).

OE006 Develop and interpret marketing plans.

OF002 Calculate break-even prices.

OI001 Utilize appropriate production techniques for livestock (beef cattle, dairy cattle, swine, horses,

OI002 Utilize appropriate production techniques for crops (corn, soybeans, tobacco, forage).

## **Learning Targets**

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

Evaluate the impact animal by-products have on your everyday life.

-Document: No Such Thing as a Vegan (Josh)

Create a marketing advertisement for an animal enterprise.

-Link: [https://www.ffa.org/documents/cde\\_marketingplan\\_guidebook.pdf](https://www.ffa.org/documents/cde_marketingplan_guidebook.pdf)

Identify where the major cuts of meat are found on beef, pork and chicken. Compare different cuts of meat with regards to flavor and texture.

-Link: <http://aggiemeat.tamu.edu/judging/meatjudging.html>

-Document: The Butcher

## **Technical Literacy Standards**

Key Ideas and Details – 11-12 – Cite specific textual evidence to support analysis of text

Craft and Structure – 11-12 – Determine meaning of symbols, key terms, and other domain-specific words and phrases

Integration of Knowledge and Ideas – 11-12 – Evaluate the hypotheses, data analysis, and conclusions in scientific and/or technical text

Research to Build and Present Knowledge – 11-12 – Gather relevant information from multiple authoritative print and digital sources