



Animal Science I

Course Number	491180
Grade Level	9-12
Career Cluster	Agriculture
Pathway	Animal Systems
Course Sequence	Level 2
CTSO	FFA
Industry Recognized Credential	https://forms.act.org/certificate/pdf/NCRC-InformationFlyer.pdf OR https://www.tvma.org/Education-Opportunities/CVA
Minimum Equipment List	LINK
Course Description	

CIP Codes	CIP Title
1.0901	Animal Sciences, General
1.0902	Agricultural Animal Breeding
1.0904	Animal Nutrition
1.0905	Dairy Science
1.0906	Livestock Management
1.0907	Poultry Science
1.0999	Animal Sciences, Other

SOC Codes	SOC Title
19-1011	Animal Scientists
19-4012	Agricultural Technicians
45-2021	Animal Breeders
45-2093	Farmworkers, Farm, Ranch, and Aquacultural Animals
29-1131	Veterinarians
39-2021	Animal Caretakers (Nonfarm)
11-9013	Farmers, Ranchers, and Other Agricultural Managers



Course Standards

Animal Science I Domain 1 Explore FFA and career opportunities in animal science	
Standard 1.1 Determine the career opportunities in the field of animal science.	
Performance Indicators	
1.1.1	Explore and compare local and regional career opportunities in animal science industries and evaluate labor data to predict employment outlook.
1.1.2	Describe knowledge, skills, and abilities necessary for diverse careers in animal sciences, including veterinary medicine, animal production, animal products, and animal care services.
Standard 1.2 Discover the FFA and experiential learning opportunities in animal science.	
Performance Indicators	
1.2.1	Examine the Livestock Evaluation, Horse Evaluation, Poultry Evaluation, Food Science, Dairy Evaluation, Meat Evaluation and Veterinary Science Career Development Events for opportunities to exhibit skills needed in Animal Science.
1.2.2	Research ways that Animal Science or the skills needed may be implemented as a Supervised Agricultural Experience, and other FFA activities that might involve similar topics.
Domain 2 Analyze how animal domestication shaped the impact of modern animal industries on agriculture and society	
Standard 2.1 Analyze the historical development of animal domestication.	
Performance Indicators	
2.1.1	Explain the varied roles domesticated animals played in the development of human civilizations.
2.1.2	Evaluate the historical processes of animal domestication by comparing species-specific domestication pathways.



2.1.3	Research the historical importance of various animal species, noting major economic, social, and medical advances impacting domestication.
Standard 2.2 Evaluate economic impacts of animal industries.	
Performance Indicators	
2.2.1	Determine general economic impact of animal industries by investigating both recreational and business implications of animal production.
2.2.2	Compare and contrast different animal breeds and their economic significance in Arkansas agriculture and companion animal industries.
2.2.3	Compare identification, selection, evaluation and inspection techniques to ensure safe and quality animal products and byproducts.
Domain 3 Apply knowledge of basic animal anatomy and physiology to animal care and management	
Standard 3.1 Identify basic anatomical structures and physiological systems in animals.	
Performance Indicators	
3.1.1	Compare and contrast the anatomical structures and physiological functions of major body systems across different species (e.g., skeletal, muscular, digestive, respiratory, circulatory, urinary, reproductive, nervous, endocrine, and integumentary systems).
3.1.2	Explain the relationship among cells, tissues, organs, and organ systems in maintaining animal health and homeostasis.
3.1.3	Distinguish between anatomical and physiological differences among different animal species and breeds.
Standard 3.2 Evaluate animal health indicators and basic care requirements.	
Performance Indicators	
3.2.1	Distinguish between clinical signs of proper health and poor health in animals, justifying explanations with observable data and evidence.
3.2.2	Identify common symptoms of illness and disease in animals and recommend appropriate responses.
3.2.3	Demonstrate basic animal care procedures, including grooming, handling, and routine health monitoring.



Domain 4
Analyze animal nutrition principles and digestive systems

Standard 4.1 Compare digestive systems among different animal species.

Performance Indicators

4.1.1	Differentiate between ruminant and non-ruminant animals, comparing and contrasting their anatomical and physiological differences.
4.1.2	Explain relationships of digestive system types to animals' ability to digest and absorb different classes of feed.
4.1.3	Identify major components of digestive systems and their functions in nutrient utilization.

Standard 4.2 Analyze animal nutritional requirements in order to meet dietary needs.

Performance Indicators

4.2.1	Research nutrient requirements of animal diets and organize them into various nutrient groups.
4.2.2	Differentiate between roughages and concentrates and analyze their nutritional values for different animal species.
4.2.3	Interpret feed labeling and evaluate factors such as life stage and activity level to determine nutritional needs.

Standard 4.3 Calculate and recommend appropriate, balanced animal rations based on animal characteristics.

Performance Indicators

4.3.1	Calculate appropriate rations based on animal characteristics, including age, weight, breed, and activity level.
4.3.2	Distinguish among symptoms of nutritional diseases relevant to various animal species and recommend appropriate control procedures.
4.3.3	Recommend balanced rations for different animal species, justifying recommendations with nutritional evidence.



Domain 5	
Examine basic principles of animal reproduction and genetics	
Standard 5.1 Analyze reproductive systems and processes in animals.	
Performance Indicators	
5.1.1	Research major components of male and female reproductive systems in animals and distinguish functions of reproductive organs.
5.1.2	Identify hormones involved in animal reproduction and their physiological effects.
5.1.3	Summarize physiological changes during reproductive phases, e.g., estrus cycles, fertilization, gestation, parturition, and lactation.
Standard 5.2 Apply basic genetic principles to animal breeding.	
Performance Indicators	
5.2.1	Explain fundamental principles of genetics as they apply to animal breeding and trait inheritance.
5.2.2	Identify economically important traits in production animals and companion animals.
5.2.3	Describe how genetic selection and breeding methods influence animal characteristics and performance.
Standard 5.3 Evaluate animal breeding methods and reproductive technologies.	
Performance Indicators	
5.3.1	Illustrate reproductive systems graphically and summarize available breeding methods for different animal species.
5.3.2	Compare natural breeding methods with artificial reproductive technologies.
5.3.3	Analyze advantages and disadvantages of different breeding systems and their applications.



Domain 6	
Use basic veterinary safety practices, medical terms, and anatomy knowledge to understand animal health	
Standard 6.1 Apply appropriate safety measures, sanitation procedures, and legal regulations relevant to veterinary science	
Performance Indicators	
6.1.1	Identify and categorize chemical, physical, zoonotic, and biological hazards associated with veterinary clinical practice environments.
6.1.2	Demonstrate proper infection control practices (e.g., hand washing, gloving, gowning, and masking techniques) according to industry standards.
6.1.3	Explain the purpose and importance of Personal Protective Equipment (PPE) for various veterinary procedures.
6.1.4	Identify common chemicals used in veterinary practice (e.g., cleansers, disinfectants, and antiseptics).
6.1.5	Describe OSHA regulations and Arkansas state requirements pertaining to workplace safety in veterinary facilities.
6.1.6	Use correct procedures for handling and disposing of hazardous materials (e.g., biological material, sharps, hazardous waste) in compliance with regulations.
Standard 6.2 Demonstrate proficiency in using veterinary medical terminology.	
Performance Indicators	
6.2.1	Identify and define common Greek and Latin prefixes, suffixes, and root words used to build veterinary medical vocabulary.
6.2.2	Use anatomical and directional terminology (e.g., anterior, posterior, distal, proximal, dorsal, ventral, medial, lateral) when describing animal body structures.
6.2.3	Interpret and apply standard medical abbreviations and symbols commonly used in veterinary records and prescriptions.
6.2.4	Interpret animal health information from realistic veterinary medical records.
Standard 6.3 Demonstrate understanding of comparative animal anatomy and physiology across common domestic species	
Performance Indicators	
6.3.1	Identify the major external anatomical features of small companion animals (e.g., dogs, cats, rabbits, guinea pigs) and large animals (e.g., cattle, horses, sheep, goats) using accepted species terminology.



6.3.2	Identify the three main anatomical planes (e.g., sagittal, frontal/coronal, and transverse) and describe how they are used to study animal body structures.
6.3.3	Locate and identify major bones, muscles, and internal organs on anatomical models, diagrams, or preserved specimens.
6.3.4	Describe normal and abnormal physiological characteristics within body systems and identify common disorders associated with each system for various species.

Domain 7
Identify and manage animal health issues and diseases

Standard 7.1 Identify common animal diseases and health problems.

Performance Indicators

7.1.1	Identify, research, and determine significance of zoonotic diseases associated with various animal species.
7.1.2	Research common diseases and parasites affecting animal health and their effects on different species.
7.1.3	Compare and contrast findings relating to specific diseases and their prevention or management strategies.

Standard 7.2 Develop disease prevention and biosecurity practices.

Performance Indicators

7.2.1	Describe and discuss the use of different methods of infection control in prevention or management of animal diseases.
7.2.2	Evaluate existing biosecurity measures in animal production and care facilities.
7.2.3	Identify and summarize laws and regulations pertaining to animal health and safety from state and national legislation.

Standard 7.3 Recommend animal health management practices.

Performance Indicators

7.3.1	Describe health requirements and necessary documentation for animal transportation and change of ownership.
7.3.2	Use evidence from medical literature to recommend best prevention or control measures for common animal diseases.



7.3.3	Develop basic health management protocols for different animal species and production systems.
Domain 8 Evaluate animal housing, facilities, and management systems	
Standard 8.1 Design appropriate animal housing and facilities.	
Performance Indicators	
8.1.1	Evaluate housing requirements considering animal behavior, environmental needs, and production goals.
8.1.2	Assess facility design features that promote animal welfare and operational efficiency.
Standard 8.2 Analyze animal behavior and management responses.	
Performance Indicators	
8.2.1	Identify appropriate owner/handler responses to animal behaviors and instincts to ensure safety of both handler and animal.
8.2.2	Compare the methods for handling different animal species and discuss what makes the methods effective or ineffective.
8.2.3	Demonstrate understanding of animal behavior principles and their application in management practices.
Standard 8.3 Evaluate animal management practices and their economic implications.	
Performance Indicators	
8.3.1	Analyze economic implications of various animal management practices and their cost-effectiveness.
8.3.2	Compare different management systems and their impacts on animal welfare and production efficiency.
8.3.3	Assess environmental factors affecting animal performance and management decisions.



Domain 9	
Examine fundamental concepts of animal rights and welfare	
Standard 9.1 Examine fundamental concepts of animal rights and welfare.	
Performance Indicators	
9.1.1	Identify fundamental philosophies related to animal rights and animal welfare and their historical development.
9.1.2	Compare impacts of specific persons, organizations, and legislation related to animal rights and welfare.
9.1.3	Analyze relationship between animal welfare principles and practical animal management decisions.
Standard 9.2 Evaluate ethical issues in animal science and care.	
Performance Indicators	
9.2.1	Debate specific ethical issues related to animal rights and welfare by forming claims and counterclaims with specific data and evidence.
9.2.2	Research benefits and responsibilities of animal ownership, including factors to consider when choosing appropriate animals.
9.2.3	Compare and contrast characteristics of responsible animal ownership with practices shown to be negligent or inappropriate.
Standard 9.3 Apply ethical principles to animal science practices.	
Performance Indicators	
9.3.1	Evaluate societal and economic issues that may impact animal owners and animal industries.
9.3.2	Analyze global animal ethics issues and their relation to local animal science practices.
9.3.3	Demonstrate understanding of legal and ethical responsibilities associated with animal ownership and care.



Domain 10	
Analyze environmental factors associated with animal production	
Standard 10.1 Examine technological advances in animal science.	
Performance Indicators	
10.1.1	Examine specific emerging technologies in animal industries, including equipment, procedures, and healthcare advances.
10.1.2	Evaluate economic and societal implications of technological advances in animal production and care.
10.1.3	Research current developments in animal genomics and their applications in breeding and health management.
Standard 10.2 Analyze sustainable practices in animal production.	
Performance Indicators	
10.2.1	Evaluate environmental impacts of different animal production systems and management practices.
10.2.2	Research sustainable animal agriculture practices and their implementation in Arkansas.
10.2.3	Analyze relationships between animal production, environmental stewardship, and economic viability.
Standard 10.3 Explore future career opportunities in animal science.	
Performance Indicators	
10.3.1	Investigate emerging career opportunities in animal science fields, including biotechnology, animal welfare, and precision agriculture.
10.3.2	Evaluate impact of technological advances on future employment opportunities in animal science industries.

Contributors

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