



## Animal Science II

Course Number	491010
Grade Level	9-12
Career Cluster	Agriculture
Pathway	Animal Systems
Course Sequence	Level 3
CTSO	FFA
Industry Recognized Credential	<a href="https://forms.act.org/certificate/pdf/NCRC-InformationFlyer.pdf">https://forms.act.org/certificate/pdf/NCRC-InformationFlyer.pdf</a> OR <a href="https://www.aws.org/Certification-and-Education/">https://www.aws.org/Certification-and-Education/</a>
Minimum Equipment List	LINK
Course Description	

CIP Codes	CIP Title
1.0901	Animal Sciences, General
1.0902	Agricultural Animal Breeding
1.0905	Dairy Science
1.0906	Livestock Management
1.0907	Poultry Science
1.0999	Animal Sciences, Other
1.8301	Veterinary/Animal Health Technology/Technician and Veterinary Assistant.

SOC Codes	SOC Title
11-9013	Farmers, Ranchers, and Other Agricultural Managers
19-1011	Animal Scientists
19-1013	Soil and Plant Scientists
29-1131	Veterinarians
31-9096	Veterinary Assistants and Laboratory Animal Caretakers
45-2021	Animal Breeders
45-2093	Farmworkers, Farm, Ranch, and Aquacultural Animals
29-2056	Veterinary Technologists and Technicians



## Course Standards

<b>Animal Science II</b> <b>Domain 1</b> <b>Examine Career and FFA Opportunities associated with animal science</b>	
<b>Standard 1.1 Evaluate career opportunities in the field of animal science.</b>	
Performance Indicators	
1.1.1	Research educational requirements for careers in animal production and veterinary medicine (e.g., degrees, certifications, training, internships, etc.) and analyze personal skills in order to create a comprehensive career plan.
1.1.2	Compare and contrast career paths in production agriculture versus veterinary medicine.
<b>Standard 1.2 Assess FFA and experiential learning opportunities in animal science.</b>	
Performance Indicators	
1.2.1	Participate in relevant Career Development Events (e.g., Livestock Evaluation, Horse Evaluation, Veterinary Science) to develop skills needed in Animal Systems.
1.2.2	Design Supervised Agricultural Experience projects incorporating both animal production and animal health management components.
<b>Domain 2</b> <b>Analyze historical development and current trends in animal industries</b>	
<b>Standard 2.1 Evaluate animal industry development and implications.</b>	
Performance Indicators	
2.1.1	Examine and evaluate contemporary developments, innovations, and challenges shaping modern animal agriculture and veterinary medicine.



2.1.2	Assess current trends in the animal industry in order to forecast potential future scenarios in animal agriculture and veterinary medicine and analyze how those scenarios may impact the animal and verterinary industries.
<b>Standard 2.2 Assess animal production methods and marketing strategies.</b>	
Performance Indicators	
2.2.1	Compare conventional, sustainable, organic, and other animal production methods.
2.2.2	Evaluate the impact of production methods on animal welfare, product quality, and consumer acceptance.
2.2.3	Design and evaluate comprehensive marketing plans for animal products and services.
2.2.4	Implement effective record-keeping systems for integrated animal enterprises.
2.2.5	Evaluate selection techniques using quality assurance standards to ensure safety and quality for animal products and byproducts.
2.2.6	Use national quality assurance standards to evaluate and inspect animal products and byproducts to ensure safety and quality.
<b>Domain 3</b> <b>Apply scientific principles in animal evaluation and selection</b>	
<b>Standard 3.1 Classify and evaluate animals systematically.</b>	
Performance Indicators	
3.1.1	Apply taxonomic classification systems and industry terminology.
3.1.2	Evaluate animals based on anatomical and physiological characteristics.
3.1.3	Select animals for specific purposes, considering health, performance, and production goals.



<p><b>Domain 4</b></p> <p><b>Apply animal behavior principles to ensure welfare and optimize handling</b></p>	
<p><b>Standard 4.1 Demonstrate animal welfare management techniques.</b></p>	
<p>Performance Indicators</p>	
4.1.1	Analyze animal behavior signals and responses across different species.
4.1.2	Design and implement low-stress animal handling and restraint procedures.
4.1.3	Evaluate safety protocols for working with various animal species.
4.1.4	Assess animal welfare standards and their implementation in production systems.
<p><b>Domain 5</b></p> <p><b>Design comprehensive nutrition programs for optimal animal performance and health</b></p>	
<p><b>Standard 5.1 Analyze nutritional requirements across animal production systems.</b></p>	
<p>Performance Indicators</p>	
5.1.1	Differentiate nutritional needs based on an animal's growth stage, production system, and health status.
5.1.2	Correlate animal nutritional needs with appropriate feedstuffs and supplements.
5.1.3	Design and defend animal nutritional programs that support both production goals and health maintenance.
5.1.4	Evaluate the role of nutrition in disease prevention and recovery in various species of animal.



<b>Domain 6</b>	
<b>Apply scientific principles to optimize animal reproductive performance</b>	
<b>Standard 6.1 Evaluate animal breeding soundness and reproductive health.</b>	
Performance Indicators	
6.1.1	Assess animals for breeding readiness and reproductive soundness.
6.1.2	Identify and address common reproductive health issues in various species of animals.
<b>Standard 6.2 Implement advanced animal breeding technologies.</b>	
Performance Indicators	
6.2.1	Compare the economic costs and practical considerations of natural breeding versus artificial breeding methods across different animal species.
6.2.2	Demonstrate artificial insemination techniques with proper animal health protocols.
6.2.3	Evaluate advanced reproductive technologies (e.g., embryo transfer, synchronization) for different animal species.
6.2.4	Analyze and interpret Expected Progeny Differences (EPDs) to make informed breeding decisions that improve specific genetic traits in livestock populations.
6.2.5	Design breeding and mating strategies that maximize genetic gain for economically important traits while maintaining genetic diversity.
<b>Domain 7</b>	
<b>Integrate preventive and therapeutic animal health care practices</b>	
<b>Standard 7.1 Design preventive animal health programs.</b>	
Performance Indicators	
7.1.1	Identify and utilize veterinary tools and technology for animal health management.



7.1.2	Recognize symptoms of common animal diseases, parasites, and physiological disorders.
7.1.5	Design species-specific health maintenance programs.
<b>Standard 7.2 Apply veterinary assistance skills.</b>	
Performance Indicators	
7.2.1	Perform basic health evaluations, take vital signs, and perform emergency response procedures on different species of animals.
7.2.2	Demonstrate proper aseptic techniques and wound management on various animals.
7.2.3	Assist with surgical and non-surgical veterinary procedures.
7.2.4	Determine when to refer cases to veterinary professionals.
7.2.5	Administer treatments according to veterinary prescriptions.
<b>Standard 7.3 Implement biosecurity and animal disease control measures.</b>	
Performance Indicators	
7.4.1	Implement preventive health protocols, including vaccination schedules and biosecurity measures for various species of animals.
7.4.2	Evaluate disease prevention and control strategies.
7.4.3	Analyze causal agents and vectors of animal diseases.
7.4.4	Implement quarantine and isolation protocols.



<b>Domain 8</b>	
<b>Design and evaluate animal housing and handling systems</b>	
<b>Standard 8.1 Create comprehensive facility designs.</b>	
Performance Indicators	
8.1.1	Design animal facilities that optimize welfare, production efficiency, and health management.
8.1.2	Evaluate facility layouts for safety, sustainability, and ease of handling.
8.1.3	Select appropriate equipment and technology for integrated production and health management.
8.1.4	Assess facilities for surgical and non-surgical veterinary procedures.
<b>Standard 8.2 Implement environmental management and ventilation systems.</b>	
Performance Indicators	
8.2.1	Design ventilation systems that maintain optimal air quality, temperature, and humidity levels for different species and production stages.
8.2.2	Evaluate environmental control systems including heating, cooling, and air exchange rates to minimize disease transmission and stress.
8.2.3	Calculate space requirements based on animal size, behavior, regulatory standards, and welfare guidelines.
8.2.4	Assess environmental factors (e.g., lighting, noise levels, and thermal comfort zones) for their impact on animal productivity and welfare.
<b>Standard 8.3 Design and manage waste systems and sustainability practices.</b>	
Performance Indicators	
8.4.1	Develop waste management plans that address collection, storage, treatment, and disposal in compliance with environmental regulations.
8.4.2	Evaluate manure management systems including composting, anaerobic digestion, and nutrient management strategies.
8.4.3	Design facilities that minimize environmental impact through water conservation, energy efficiency, and waste reduction practices.



<b>Standard 8.4 Conduct facility evaluation and cost analysis.</b>	
Performance Indicators	
8.4.1	Perform comprehensive facility assessments using evaluation rubrics that address animal welfare, biosecurity, worker safety, and operational efficiency.
8.4.2	Conduct cost-benefit analyses comparing different facility designs, equipment options, and management systems.
8.4.3	Evaluate return on investment for facility upgrades, renovations, and new construction projects.
8.4.4	Analyze the relationship between facility design choices and long-term operational costs including labor, utilities, maintenance, and animal health expenses.

**Contributors**

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