

End of Course Assessment Blueprint

Principles of Agricultural Science – Animal EoC

The **End of Course Assessment Blueprint** aligns CASE 4 Learning (CASE) Concepts and Performance Objectives to the National AFNR Content standards and performance indicators developed by the National Council for Agricultural Education (The Council). The concepts and performance objectives listed in this blueprint are assessed in the **Principles of Agricultural Science – Animal End-of-Course Assessment**. The assessment is available through **NOCTI**, serving as a CASE partner for third-party delivery. Teachers should use this blueprint to prepare their students for the comprehensive **Principles of Agricultural Science – Animal End-of-Course Assessment**.

In the CASE learning model, Concepts are key elements of understanding that students are expected to learn. Concepts are developed by a curriculum committee of content experts comprised of industry representatives, post-secondary educators, and secondary teachers. Performance Objectives are how students will demonstrate their understanding of the concept. All Concepts and Performance Objectives measure student competency of the AFNR Content Standards. The AFNR Content Standards provide state agricultural education leaders and educators with a high-quality, rigorous set of standards to guide what students should know and be able to do after completing a program of study in each of the following AFNR Career Pathways.

- Career Ready Practices (Integrated)
- Foundational Pathway Skills (Integrated)
- Agribusiness Systems
- Animal Systems
- Biotechnology Systems
- Education, Communication, and Leadership
- Environmental Sustainability Systems
- Food Products and Processing Systems
- Natural Resource Systems
- Plant Systems
- Power, Structural, and Technical Systems

DEFINITIONS: Within each pathway, the standards are organized and aligned to the CASE curriculum as follows:

- **Standards** – These are the standards owned by Advance CTE and used here with permission. The standards defined the scope and guided the development of the updated indicators and CASE measurements.
- **Performance Indicators** – These statements distill each standard into more discrete indicators of the knowledge and skills students should attain through a program of study in this pathway. Attainment of the knowledge and skills outlined in the performance indicators is intended to demonstrate an acceptable level of proficiency with the related standard at the conclusion of a program of study in this area.
- **CASE Measurements** – These are CASE Concepts with bulleted Performance Objectives. Students carry out the Performance Objectives to show understanding of the Concept, which indicates attainment of each performance indicator. The beginning CASE measurements require students to remember, understand, identify, explain, and summarize information. The intermediate CASE measurements require students to apply, analyze, compare, distinguish, and examine information and scenarios. The advanced CASE measurements require students to assess, evaluate, justify, improve, and create.

The **Principles of Agricultural Science – Animal End-of-Course Assessment** measures student competencies in the AFNR Pathways included in this blueprint. For more information about the National AFNR Content Standards, visit The National Council for Agricultural Education’s website at <https://thecouncil.ffa.org/afnr/>.

ANIMAL SYSTEMS STANDARD

AS.01. Analyze historic and current trends impacting the animal systems industry.

PERFORMANCE INDICATOR	CASE MEASUREMENTS		
	Beginning	Intermediate	Advanced
AS.01.01. Evaluate the development and implications of animal origin, domestication, and distribution on production practices and the environment.	ASA 1.2 Concept 1 Domestication of animals is achieved through breeding, handling, and training.	ASA 1.1 Concept 1 Animals serve many purposes in the lives of humans, including providing life-sustaining products such as meat, milk, and fiber.	
	<ul style="list-style-type: none"> • Compare domestic and wild animals using the characteristics of domestication. 	<ul style="list-style-type: none"> • Determine and analyze the use of animal products over the course of one day. • Develop a list of animal products commonly used based on previous experience. 	
PERFORMANCE INDICATOR	CASE MEASUREMENTS		
	Beginning	Intermediate	Advanced
AS.01.02. Assess and select animal production, marketing, and management methods based upon effectiveness and potential social and environmental impacts.	ASA 2.1 Concept 1 The beliefs of an individual influence the value humans place on live animals and the use of products derived from animals.		ASA 2.3 Concept 2 Producers implement biosecurity practices to reduce the spread of pathogens on farms
	<ul style="list-style-type: none"> • Discuss the differences in the interpretation of the meaning of the word value. • Assess their values to determine their beliefs about animal use. 		<ul style="list-style-type: none"> • Experiment to determine the risk levels related to spreading pathogens in a farm scenario. • Observe and record culture growth.
	ASA 2.1 Concept 2 Animal welfare and animal rights are different belief systems pertaining to the acceptable use of animals.		
	<ul style="list-style-type: none"> • Determine their current opinions towards the beliefs of animal rightists and animal welfarists. 		
PERFORMANCE INDICATOR	CASE MEASUREMENTS		
	Beginning	Intermediate	Advanced
			ASA 8.3 Concept 3 A solid marketing plan is necessary to increase the value and sales of a product and move goods from producer to consumer.
			<ul style="list-style-type: none"> • Work on a team to determine a market for a product in an appropriate local marketplace.

ANIMAL SYSTEMS STANDARD

AS.02. Utilize best-practice protocols based upon animal behaviors for animal husbandry and welfare.

PERFORMANCE INDICATOR	CASE MEASUREMENTS		
	Beginning	Intermediate	Advanced
AS.02.01. Explain management techniques that ensure animal welfare.		ASA 2.2 Concept 3 Safe handling and restraint procedures protect the animal and handler.	
		<ul style="list-style-type: none"> Research and determine the typical behaviors of a species of animal and become familiar with the safe handling procedures of that animal. 	
		ASA 2.3 Concept 1 Animal facilities differ based on food requirements, environmental factors, species, use, and size of operations.	
		<ul style="list-style-type: none"> Research the basic feed, water, and shelter requirements for animals. Determine the average environmental conditions of the students' facility location. 	

ANIMAL SYSTEMS STANDARD

AS.03. Design and provide proper animal nutrition to achieve desired outcomes for performance, development, reproduction and/or economic production.

PERFORMANCE INDICATOR	CASE MEASUREMENTS		
	Beginning	Intermediate	Advanced
AS.03.01. Analyze the nutritional needs of animals.	ASA 4.2 Concept 1 The six nutrient groups required by animals include water, carbohydrates, protein, fats, vitamins, and minerals.		ASA 4.4 Concept 1 Livestock rations meet the requirements of animals, maximize feed efficiency, and minimize the cost of production.
	<ul style="list-style-type: none"> Identify the six classes of nutrients, the function they serve in the body, and sources of each nutrient. 		
	ASA 4.2 Concept 2 Animals derive nutrition from a variety of sources, including roughages and concentrates.		
	<ul style="list-style-type: none"> Classify feedstuffs as roughages, concentrates, and supplements. 		
PERFORMANCE INDICATOR	CASE MEASUREMENTS		
	Beginning	Intermediate	Advanced
		ASA 4.3 Concept 1 Animal growth, development, and health are directly	ASA 4.2 Concept 4 The nutritional value of a feed can be determined through feed analysis.

AS.03.02. Analyze feed rations and assess if they meet the nutritional needs of animals.		related to meeting the nutrient requirements of the animal.	
		<ul style="list-style-type: none"> • Study the nutritional disorders of one species. • Share nutritional disorders with the class. • Examine supplement labels to substantiate nutritional disorders associated with feed nutrients. 	<ul style="list-style-type: none"> • Identify and define feed analysis terms. • Conduct a dry matter analysis for two feedstuff samples. • Conduct inquiry experiment to determine the energy in two feedstuff samples.
			ASA 4.4 Concept 2 Using mathematics and problem solving are important skills for animal producers when formulating rations.
			<ul style="list-style-type: none"> • Complete conversions of feedstuffs from a dry-matter basis to an as-fed basis.
		ASA 4.4 Concept 3 The animal industry uses mathematical calculations to formulate rations.	<ul style="list-style-type: none"> • Use the Pearson Square to balance a ration using two feedstuffs. • Formulate a ration and make a recipe using the Pearson Square. • Develop a balanced ration for livestock by hand and by using a computer-based ration-balancing program.

ANIMAL SYSTEMS STANDARD

AS.04. Apply principles of animal reproduction to achieve desired outcomes for performance, development and/or economic production.			
PERFORMANCE INDICATOR	CASE MEASUREMENTS		
	Beginning	Intermediate	Advanced
AS.04.01. Evaluate animals for breeding readiness and soundness.	ASA 5.2 Concept 1 Understanding of the estrus cycle and hormonal control is essential for reproductive success.		
	<ul style="list-style-type: none"> • Identify the main hormones of the estrous cycle and graph the levels of each hormone throughout the cycle. 		
PERFORMANCE INDICATOR	CASE MEASUREMENTS		
	Beginning	Intermediate	Advanced
AS.04.02. Apply scientific principles to select and care for breeding animals.	ASA 6.1 Concept 4 Dominant and recessive genes determine the phenotypic characteristics of animals.		ASA 6.2 Concept 1 Punnett Squares predict qualitative traits inherited from a single gene pair.
	<ul style="list-style-type: none"> • Perform computer simulations related to genetic heritage to learn about the 		<ul style="list-style-type: none"> • Use Punnett Squares to predict the probability of genetic frequencies.

	role genetics plays in animal production.		• Complete a Punnett Square with a dihybrid cross.
PERFORMANCE INDICATOR	CASE MEASUREMENTS		
	Beginning	Intermediate	Advanced
AS.04.03. Apply scientific principles to animal breeding.		<p>ASA 8.2 Concept 1 Criterion-based selection establishes priorities and provides consistency when evaluating animal conformation for specific species and purposes.</p> <ul style="list-style-type: none"> • Make decisions based on given priorities and criteria, and analyze objects as they compare ideal criteria. 	

ANIMAL SYSTEMS STANDARD

AS.05. Evaluate environmental factors affecting animal performance and implement procedures for enhancing performance and animal health.			
PERFORMANCE INDICATOR	CASE MEASUREMENTS		
	Beginning	Intermediate	Advanced
AS.05.01. Design and evaluate animal housing, equipment, and handling facilities for the major systems of animal production.			<p>ASA 2.3 Concept 4 Animal facilities are designed to protect the safety and health of animals and handlers and should include biosecurity protocols.</p> <ul style="list-style-type: none"> • Select an animal facility that provides safe handling and efficient production practices for animals. • Design and construct a model animal facility

ANIMAL SYSTEMS STANDARD

AS.06. Classify, evaluate and select animals based on anatomical and physiological characteristics.			
PERFORMANCE INDICATOR	CASE MEASUREMENTS		
	Beginning	Intermediate	Advanced
AS.06.02. Apply principles of comparative anatomy and physiology to uses within various animal systems.	<p>ASA 3.1 Concept 1 Animal cells are comprised of many parts that have essential functions for the survival of animal tissue.</p> <ul style="list-style-type: none"> • Identify and label animal cell organelles. • Develop a pictorial representation of cell function. • Examine and compare plant and animal cells and their structures under a microscope. 	<p>ASA 3.3 Concept 5 The nervous, endocrine, and renal systems work together to transmit signals, secrete hormones, and filter wastes.</p> <ul style="list-style-type: none"> • Map the functions of body systems, specifically the nervous, endocrine, and renal systems, to demonstrate their connection to each other and other systems in the body. 	<p>ASA 3.2 Concept 3 The collection of epithelial, connective, muscle, and nerve tissues interact to perform specific functions within the body of an animal.</p> <ul style="list-style-type: none"> • Dissect a chicken wing and identify epithelial and connective tissues.

	<p>ASA 3.3 Concept 2 External respiration is a process of gas exchange between the lungs and blood.</p> <ul style="list-style-type: none"> Describe the process of gas exchange in external respiration. Determine the presence of carbon dioxide in exhaled air. 		<p>ASA 3.3 Concept 4 Respiration and heart rates may be affected by external conditions, such as temperature and physical activity.</p> <ul style="list-style-type: none"> Conduct an inquiry on the effects of external conditions on respiration rate, pulse, and blood pressure.
	<p>ASA 4.1 Concept 2 Ruminants have a four-chambered stomach consisting of the rumen, reticulum, omasum, and abomasum, each with a specific function.</p> <ul style="list-style-type: none"> Label, identify and explain the function of various parts of animal digestive systems. 		

ANIMAL SYSTEMS STANDARD

AS.07. Apply principles of effective animal health care.			
PERFORMANCE INDICATOR	CASE MEASUREMENTS		
	Beginning	Intermediate	Advanced
AS.07.01. Design programs to prevent animal diseases, parasites, and other disorders and ensure animal welfare.	<p>ASA 7.2 Concept 1 A livestock producer's knowledge of parasite life cycles can aid in parasite control and prevention.</p> <ul style="list-style-type: none"> Identify and diagram the life cycle of a common parasite. Classify parasites according to their phylum and site of infestation on the body. Dissect product labels for common dewormers. 	<p>ASA 7.1 Concept 1 Animal caretakers observe vital signs, which vary among species, to identify health or illness.</p> <ul style="list-style-type: none"> Research and record the vital signs of an animal. Assess vital signs of an animal. 	<p>ASA 7.3 Concept 1 Disease prevention, morally and economically warranted, includes vaccination, sanitation, ventilation, and nutrition.</p> <ul style="list-style-type: none"> Demonstrate the proper procedures for filling a syringe to administer medication. Administer intramuscular and subcutaneous shots. Produce an observation tool to use in comparing symptoms of health to symptoms of poor health for their animal. Plan preventative care for their animal.

FOOD PRODUCTS AND PROCESSING SYSTEMS STANDARD

FPP.02. Apply principles of nutrition, biology, microbiology, chemistry and human behavior to the development of food products.			
PERFORMANCE INDICATOR	CASE MEASUREMENTS		
	Beginning	Intermediate	Advanced
FPP.02.03. Apply principles of human behavior to develop food		<p>ASA 8.1 Concept 2 Grading is used to provide consistent and palatable food products.</p>	

<p>products to provide a safe, wholesome, and nutritious food supply for local and global food systems.</p>		<ul style="list-style-type: none">• Conduct sensory evaluation trials on meat samples and evaluate the samples.• Taste milk samples and determine the defects, if present.• Identify samples of cheese based on appearance and taste.• Grade eggs based on their interior qualities using the candling and breakout methods.	
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