

**Options EHS Pre-Veterinarian Animal Systems 2020 Scope and Sequence**

**Unit Lesson**

**Objectives**

**NATURE AND SCOPE OF ANIMAL AGRICULTURE IN OUR SOCIETY AND ECONOMY**

History of Animal Agriculture

Examine how early humans survived through foraging and scavenging.

Explain the historical development of animal systems and husbandry practices around the world.

Compare the efficiencies and scale of the first, primitive methods of agriculture and animal production with the ones in use today.

Construct a timeline of the evolution of animal-husbandry practices over the ages.

Explore careers involving animals.

Advancements in Animal Agriculture

Examine and apply best-management practices in animal agriculture.

Evaluate and select superior animals to be used for reproductive purposes.

Investigate animal-performance data.

Explore careers in animal agriculture.

Study the environmental impact of animal management and production systems.

Project: The Discovery that Changed Farming

Today's Animal Agriculture and Consumer

Compare and contrast consumer trends pertaining to animal agriculture.

Describe modern agriculture as large in scale and dependent on transportation to get food products to people across the country and around the world.

List ways in which farmers have changed their practices in response to concerns about the environment.

Define the organic-farming movement.

Project: Reliance on Animal Products in

Unit	Lesson	Objectives
	Daily Life	
	Animal Behavior and Safety Practices in Animal Agriculture	<p>Explain the factors and psychology of understanding animal behavior.</p> <p>Identify best safety practices and handling techniques when working with animals.</p> <p>Describe Dr. Temple Grandin's contributions to the welfare of livestock.</p> <p>List the different threats presented by animals, specifically cattle, horses, and pigs.</p>
	Animal Breeds and Classification	<p>Define animal classifications.</p> <p>Research the major species of animal breeds.</p> <p>Discuss the purpose of selective breeding.</p> <p>List the taxonomy of cattle, pigs, sheep, and goats.</p>
	Project: A Breed Apart	
	Test	
<b>ANIMAL SELECTION AND HEALTH</b>		
	Parts and Processes of the Animal Cell	<p>Label and define parts of an animal cell.</p> <p>Contrast animal and plant cells.</p> <p>Describe the functions of different types of cells.</p> <p>Recall the names and primary functions of each of the four major animal tissue types.</p> <p>Explain Gregor Mendel's contribution to biology.</p> <p>Examine different career options in the field of biology.</p>

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	Project: 3D Gelatin Animal Cell	
	Animal Anatomy and Physiology	
		Classify animals based on digestive anatomy.
		Compare animals' anatomical and physiological structures.
		Identify major animal systems, and describe their functions.
		Describe different career opportunities in animal biology, physiology, and anatomy.
	Project: You Are What You Eat	
	Selecting Excellence	
		Recognize animals based on superior genotype and phenotype expressions.
		Explain the basis for selectively breeding animals for certain traits.
		Summarize the estimated progeny difference and what it means in terms of the selective breeding of livestock.
		List reasons why different genetic traits are desirable.
		Explore the career option of Livestock Breeder.
	Animal Diseases and Prevention	
		Recognize common animal diseases.
		Explore a career in veterinarian science.
		Classify common causes of animal disease.
		Describe animal disease and parasitic infestation prevention and treatment methods.
	Project: Animal Disease, Treatment, Prevention, and Prognosis	
	Animal Parasites and Treatment	
		Recognize animal parasites for certain species of livestock.

Unit Lesson

Objectives

Summarize methods of the prevention of animal parasites.

Explain methods of treatment of animal parasites.

Identify animal-husbandry practices that minimize the risk of parasites.

Explore a career as a parasitologist.

Best-Management Practices to Improve Herd Health

List the elements of herd or flock health.

Summarize causes of animal diseases.

Classify animal-husbandry systems.

Explain best practices for improving and maintaining herd or flock health.

Test

**ANIMAL NUTRITION, GROWTH, AND DEVELOPMENT**

Animal Digestive Anatomy

Label and define parts of a monogastric and polygastric system.

Compare digestive nutrients in monogastric and polygastric animals.

Evaluate best-management practices in animal husbandry.

Describe why animal nutrition must be tailored to the animals' particular digestive system and energy needs.

Project: Life as a Blade of Grass

Animal Nutrients and Needs

Define the six nutrients of life.

Describe animal-nutrition needs based on performance measure.

Identify animal-nutrition stresses or diseases.

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Design a nutritional program for a given animal.

Explore the career option of an animal nutritionist.

Project: The Six Nutrients of Life

Selecting Feed and Feedstuff

Compute a balanced feed ration.

Select the feed or feedstuff for a given species or animal.

Define an animal's nutritional needs based on their stage of life and production purpose.

Assess whether a nutritional plan for a given animal is meeting that animal's needs by recording performance and comparing feed variations.

Mitosis, Meiosis, and Prenatal Development

Compare and contrast mitosis and meiosis.

Explain the stages of prenatal development.

Summarize the prenatal growth process.

Evaluate the four production stages of growth, production, reproduction, and performance.

Parturition and Postnatal Development

Define the stages of parturition.

Identify ways in which hormones play a role in parturition.

Summarize what can happen if a fetus is not positioned correctly for birth.

Explain the postnatal animal growth process.

Explain the postnatal animal growth process.

Project: Animal Parturition

Animal Performance and Development

Unit Lesson

Objectives

Define the animal growth and development process.

Explain the stages of growth, production, reproduction, and performance.

Explore the career option of Animal Geneticist.

List the requirements for proper growth and development.

Test

**ANIMAL REPRODUCTION**

History of Genetics

Classify genotype and phenotype characteristics.

Explain the history of genetics.

Define DNA.

Compare and contrast homozygous and heterozygous traits.

Discuss genetic variability and manipulation in animal production.

Project: The Genome Project

Traits and Heredity

Describe the difference between dominant and recessive alleles.

Explain why understanding patterns in animal genetics is important to animal producers.

List one way to visualize and predict the genetic makeup of the offspring of two parents.

Define probability and describe how it's used in genetics.

Explore the career options of Farm Animal Genomics.

Project: Traits, Breeds, and Hereditability

Biotechnology Advancements

Describe breeding techniques used in the industry.

Unit	Lesson	Objectives
		Identify the need for predicting livestock needs in the world.
		Explain biotechnology advances in use today.
		Describe the history of biotechnology.
	Reproductive Anatomy	
		Identify the elements of male and female anatomy.
		Identify the hormones responsible for reproduction.
		Research characteristics of healthy sperm.
		Explain the function of male and female anatomy.
		Evaluate livestock breeding programs.
	Project: How Do Different Species Reproduce?	
	Breeding Management	
		Describe an efficient and effective breeding-management program.
		Explain the importance of designing and using a breeding-management program.
		Detail the factors involved in optimizing the pregnancy rate in livestock.
		List factors affecting the fertility of male livestock and why this is important.
	Project: Best-Management Practices	
	Gestation, Parturition, and Lactation	
		Recognize the stages of parturition.
		Predict the behavior of a newborn animal.
		Describe the nature and importance of lactation in animals.
	Test	

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**ANIMALS AND THE ENVIRONMENT**

USDA Grades of Meat and Their Purposes

Describe USDA food-quality grades.

Retail Cuts of Meat

Classify animal product grades given by the USDA.

Create a diagram and label the cuts of a cow.

Explain the differences in cuts of pork, lamb, and poultry.

Food Safety

Identify food safety issues and concerns.

Recognize the proper temperatures for the cooking, thawing, and storage of food.

Differentiate the temperature safety level between types of meat.

Project: Food-Safety Guidelines

Wildlife Management in Cattle Ranching

Compare various wildlife-management systems.

Define animal carry load.

Project: Wildlife on the Ranch

Animal Waste Management and Treatment

Identify animal confinement systems.

Describe animal waste and possible uses.

Describe techniques of handling livestock waste.

**COURSE PROJECT, REVIEW, AND EXAM**

Review

**Unit Lesson**

**Objectives**

Review course material.

Exam