

Animal Science

Grade Levels: 10, 11, and 12

Course Mission:

To introduce agriculture students to the four major areas of agriculture education: plant science, animal science, natural resources and agriculture business. This course also introduces students to the FFA organization and the opportunities for agriculture leadership.

Major Units of Study:

- 1 quarter (9 weeks) = **Introduction**, History, Importance, Trends, Animal Behavior, Terminology, **Dairy Science**, **Livestock Production** (Beef Cattle, Swine, Sheep).
- 1 quarter (9 weeks) = **Poultry Science**, **Alternative Animals**, Aquaculture, **Small Animal Care**, **Current Issues**, Consumer Concerns, Animal Welfare.
- 1 quarter (9 weeks) = **Equine Science**, **Selection and Evaluation** (Confirmation, Pedigrees, Performance Data), Genetics, **Reproduction and Physiology**, **Facilities and Housing**.
- 1 quarter (9 weeks) = **Nutrition**, Growth and Development, Feeds and Feeding, **Veterinarian Science**, Diseases, Parasites, **Animal Products** (Meat Science, Dairy Products, Eggs, Fiber).

State Standards Addressed in this Course:

Standard C:

- A 12.1
- A 12.2
- A12.3
- A.9-12.1
- A.9-12.2
- A.9-12.3
- B. 12.1
- B. 12.2
- B. 12.3
- B. 12.4
- B.9-12.1
- B.9-12.2
- B.9-12.4
- C.9-12.2
- C.9-12.3
- C.9-12.4
- D. 12.5
- D. 12.6
- D.9-12.1
- D.9-12.2
- D.9-12.3
- D.9-12.4
- E. 12.1
- E. 12.4
- E.9-12.1
- E.9-12.2
- E.9-12.3
- F. 12.1
- F. 12.2
- F. 9-12.1

- F. 9-12.2
- F. 9-12.3
- F. 9-12.4

Concepts & Skills by Unit (concepts/skills in bold mastery essential for all students)

Unit: Introduction to Animal Science

Essential Understandings / Concepts Covered / “What students should know”:

- Define Animal Science.
- Define Domesticated Animals.
- Describe the rolls humans in the development of Animal Science.
- Describe the economic importance of Animal Science.
- Identify common domesticated animals.
- Understand the traits needed by animals for domestication.
- Explain the history of animal domestication.
- Identify the factors that determine the types of animals raised in an area.
- Define the common and formal names of animals.
- Identify animals by Binomial Nomenclature.
- Identify the average gestation and incubation periods among species.

Process Skills / “What students should be able to do”

- List area Agribusiness associated with Animal Science.

Unit: Dairy Science

Essential Understandings / Concepts Covered / “What students should know”:

- Identify the major areas of dairy production in the United States.
- Trace the steps used to milk cows.
- Identify the seven main breeds of dairy cattle.
- Evaluate dairy cattle for type and production.
- Identify the external parts of a cow.
- Recognize the major nutrient requirements in a balanced lactation ration.
- Explain the direct relationship of the reproduction process and milk production.
- Tell how milk is sold, processed, and marketed.

Process Skills / “What students should be able to do”

- Label and identify the body parts of dairy cattle.
- Evaluate dairy cattle for type and production.
- Calculate the production cost of producing milk.
- Present a research project on the dairy industry.

Unit: Livestock Production

Essential Understandings / Concepts Covered / “What students should know”:

- Explain the importance of the beef industry to the United States economy.
- Identify the major areas of beef production in the United States.
- Distinguish between the popular breeds of beef cattle, sheep, and swine.
- Identify the major areas of swine production in the United States.
- Evaluate livestock animal’s type and production.

- Identify the major areas of sheep production in the United States
- Identify the external parts of a steer, lamb, and hog.
- Explain the production methods and environmental impact of livestock production.
- Tell how market cattle, sheep, and hogs are sold, processed, and marketed.

Process Skills/ “What Students should be able to do”:

- Label and identify the body parts of a steer, lamb, and hog.
- Evaluate livestock animal’s type and production.
- Calculate the production cost of raising market animals.
- Present a research project on the livestock industry.

Unit: **Poultry Science**

Essential Understandings / Concepts Covered / “What students should know”

- Explain the importance of the poultry industry to the United States economy.
- Identify the major areas of broiler and egg production in the United States
- Summarize why the poultry industry is growing.
- Define vertical integration.
- Describe how broilers are produced.
- Identify common breeds of poultry and waterfowl.
- Describe how a modern hatchery operates.
- Describe a modern layer operation.
- Describe modern turkey production.
- Identify the external parts of a chicken.
- Tell how broilers and eggs are sold, processed, and marketed.

Process Skills/ “What Students should be able to do”

- Label and identify the body parts of a chicken.
- Calculate the cost to produce broilers and eggs.
- Incubate eggs.
- Calculate the rate of gain and feed efficiency of broilers.
- Care for chickens.

Unit: **Alternative Animals**

Essential Understandings / Concepts Covered / “What students should know”

- Identify non-traditional agriculture animals.
- Describe modern rabbit production.
- Explain the importance of the honeybee to agriculture.
- Describe goat production for milk and meat.
- Summarize the reasons that aquaculture is a growing industry.
- Identify the types of aquatic animals produced in the United States.
- Tell how non-traditional animals are sold, processed, and marketed.

Process Skills/ “What the student should be able to do”

- Raise rabbits.
- Care for fish.

Unit: **Small Animals**

Essential Understandings / Concepts Covered / “What students should know”

- Explain the importance of pets in the United States economy.

- Explain how companion animals are used.
- Explain how dog breeds are classified based on their uses.
- Identify common breeds of dogs.
- Identify common breeds of cats.
- Explain the importance of spaying and neutering.
- Identify the external parts of a dog and cat.
- Tell how pets are bought and sold.

Process Skills/ “What Students should be able to do”

- Label and identify the body parts of a dog and cat.
- Calculate the cost to have a pet.
- Care for dogs and cats.

Unit: **Current Issues**

Essential Understandings / Concepts Covered / “What students should know”

- Understand the importance of modern animal agriculture.
- Explain the reasons that some people object to modern animal agriculture.
- Identify the difference between animal rights and animal welfare.
- Defend the use of modern animal practices as related to animal health.
- Explain why agriculturalists need to be sensitive to the concerns of consumers.
- Define genetic engineering.
- Explain the importance of a safe food supply.

Explain the Process Skills/ “What Students should be able to do”

- Identify current issues in animal agriculture.
- Prepare a five-minute presentation on a current issue dealing with animal agriculture.
- Explain the relationship of modern animal agriculture and the environment.

Unit: **Equine Science**

Essential Understandings / Concepts Covered / “What students should know”

- Understand the importance of horses throughout the history of the United States.
- Explain how horse breeds are classified based on their uses.
- Identify common breeds of horses.
- Discuss the importance of the horse industry.
- Evaluate horses for performance.
- Identify the external parts of a horse.
- Tell how horses are marketed.

Explain the Process Skills/ “What Students should be able to do”

- Label and identify the body parts of a horse.
- Evaluate horse’s type and performance.
- Calculate the production cost of raising horses.
- Prepare a presentation on horses.

Unit: **Selection and Evaluation**

Essential Understandings / Concepts Covered / “What students should know”

- Explain the difference between natural selection and selective breeding.
- Explain how people have influenced the development of domesticated animals.
- Rationalize the selection of animals based on structural soundness.

- Understand the importance of performance data.
- Understand the information included on a pedigree.
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Present a research project on the livestock industry

Explain the Process Skills/ “What Students should be able to do”

- Justify the selection of different traits used by breeders.
- Evaluate animals based on pedigrees, performance data, type, confirmation, and use.
- Illustrate how scientific developments have influenced animal selection.

Unit: **Reproduction and Physiology**

Essential Understandings / Concepts Covered / “What students should know”

- Label and identify large mammal reproductive anatomy.
- Describe the parts and functions of the male and female anatomy.
- Define the hormones that control reproduction.
- Understand the benefits of artificial insemination and embryo transfer.
- Define and explain the process of cloning.
- Explain how the sex of an animal is determined.
- Describe how heritability is used in selective breeding.
- Explain the difference between phenotypic and genotypic characteristics.

Explain the Process Skills/ “What Students should be able to do”

- Label and identify the large mammal reproductive anatomy.
- Prepare a breeding plan for a selected animal

Unit: **Facilities and Housing**

Essential Understandings / Concepts Covered / “What students should know”

- Identify different types of large animal facilities.
- Understand the direct relationship of animal health and facility design.
- Understand the direct relationship of labor and facility design.
- Understand the advantages and disadvantages of confinement housing.
- List the careers related to animal facilities.

Explain the Process Skills/ “What Students should be able to do”

- Design an animal facility plan.

Unit: **Nutrition**

Essential Understandings / Concepts Covered / “What students should know”

- Explain why animals must have proper nutrition.
- Identify the six major components in a balanced ration.
- Explain the sources of animal feed.
- Identify the importance of protein in a ration.
- Label and identify a ruminant, monogastric, and avian digestive system.
- Explain the differences in feeds fed to monogastrics and ruminants.

Explain the Process Skills/ “What Students should be able to do”

- Balanced a ration.
- Identify common feedstuffs.

- Read feed tags.
- Calculate the cost of a ration.

Unit: **Veterinarian Science**

Essential Understandings / Concepts Covered / “What students should know”

- List the types of disease causing organisms.
- Distinguish between an infectious and non-infectious disease.
- Describe how diseases spread.
- Understand the types of parasites that affect animals.

Explain the Process Skills/ “What Students should be able to do”

- Identify the signs of a healthy animal.
- Identify external parasites.
- Administer medication.
- Take animal vital signs.
- Perform basic animal health care.

Unit: **Animal Products**

Essential Understandings / Concepts Covered / “What students should know”

- Describe the role of animal products in the United States economy.
- Understand the different products derived from animals.
- Explain the factors that affect taste.
- List the primary and wholesale cuts of meat.
- Distinguish between USDA meat quality and yield grades.
- List the steps in the slaughter process.
- List the steps in the cheese making process.
- Identify “add on costs” in the food industry.

Explain the Process Skills/ “What Students should be able to do”

- Calculate the farmer’s share of retail food products.
- Identify retail cuts of meat.
- Make sausage.
- Make cheddar cheese, ice cream, yogurt, and butter.