



## ANIMAL SCIENCE 3.0 STUDY GUIDE

Animal Science certifies that individuals have a knowledge and skill set applicable to the animal sector of the agriculture industry including planning, management, finance, technical and production skills, underlying principles of technology, labor issues, community issues, health, safety and environmental issues, and the use and care of animal health-care instruments, animal grooming equipment, animal restraining equipment, and laboratory equipment.

The certification standards for the Animal Science exam are based on the standards and benchmarks taught in the Florida's Animal Science program at the secondary level. Each standard is weighted based on industry needs and feedback and are noted below. The number of questions per standard is determined by the industry weight. A complete listing of Florida's Animal Science standards and corresponding benchmarks are available from the Florida Department of Education.

Standard	Description	Resource	Weight
13	Describe animal science and the role of animals in society – the student will be able to:	Modern Livestock and Poultry Production, 8th Edition: Chapter 1	7%
14	Classify animals according to hierarchical taxonomy and agricultural use	Modern Livestock and Poultry Production, 8th Edition: Chapter 1	2%
15	Identify careers in the animal industry	Modern Livestock and Poultry Production, 8th Edition: Chapter 2	5%
16	Describe animal and human first aid and laboratory safety	Modern Livestock and Poultry Production, 8th Edition: Chapter 3	7%
17	Recognize normal and abnormal animal behaviors	Modern Livestock and Poultry Production, 8th Edition: Chapter 3, Chapter 10, Chapter 16	3%
18	Apply principles of comparative anatomy and physiology to uses within various animal systems	Modern Livestock and Poultry Production, 8th Edition: Chapter 5, Chapter 9	8%
19	Evaluate the male and female reproductive systems	Modern Livestock and Poultry Production, 8th Edition: Chapter 10	5%
20	Demonstrate safe animal handling and management techniques	Modern Livestock and Poultry Production, 8th Edition: Chapter 1, Chapter 3	5%
21	Analyze the communities responsibility in options for caring for unwanted/neglected livestock	Modern Livestock and Poultry Production, 8th Edition: Chapter 1	3%
22	Evaluate the importance of the food and fiber system to understand the impact on global economy	Modern Livestock and Poultry Production, 8th Edition: Chapter 1	2%
23	Examine the scope of career opportunities in and the importance of agriculture to the economy	Modern Livestock and Poultry Production, 8th Edition: Chapter 2	2%
27	Apply principles of animal nutrition to ensure the proper growth, development, and reproduction and economic production of animals	Modern Livestock and Poultry Production, 8th Edition: Chapter 6, Chapter 7, Chapter 8	8%
28	Evaluate animals for breeding readiness and soundness	Modern Livestock and Poultry Production, 8th Edition: Chapter 10, Chapter 21, Chapter 26, Chapter 28, Chapter 41, Chapter 42, Chapter 44, Chapter 47	5%
29	Explain the reproductive system and breeding of selected animals	Modern Livestock and Poultry Production, 8th Edition: Chapter 10, Chapter 12, Chapter 15, Chapter 42	5%
30	Prescribe and implement a prevention and treatment program for animal diseases, parasites and other disorders	Modern Livestock and Poultry Production, 8th Edition: Chapter 17, Chapter 23, Chapter 29, Chapter 33, Chapter 44, Chapter 47, Chapter 48	5%
31	Demonstrate knowledge of preventive medicine and disease control	Modern Livestock and Poultry Production, 8th Edition: Chapters 17, 23,29,33,37,44	8%
32	Select animals for specific purposes and maximum performance based on anatomy and physiology	Modern Livestock and Poultry Production, 8th Edition: Chapter 14, Chapter 21, Chapter 26, Chapter 28, Chapter 35, Chapter 40	5%
33	Prepare, groom, exhibit, and market animals	Modern Livestock and Poultry Production, 8th Edition: Chapter 19, Chapter 25, Chapter 28, Chapter 31, Chapter 35, Chapter 38	4%
34	Maintain and analyze records	Modern Livestock and Poultry Production, 8th Edition: Chapter 7, Chapter 31, Chapter 42, Chapter 47	4%
35	Provide for the biosecurity of agricultural animals and production facilities	Modern Livestock and Poultry Production, 8th Edition: Chapter 3	3%
36	Explain the components of the American business system	Agriscience Fundamentals & Applications, 5th Edition: Unit 36	2%
37	Investigate agricultural cooperatives structure and function	Agriscience Fundamentals & Applications, 5th Edition: Unit 36	2%

## ANIMAL SCIENCE AND SERVICES 2

### STANDARD 13

### 7 QUESTIONS

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Students should be familiar with animal science, including:

- Role of animals in society
- Public opinion on animal related issues
- Major components of the animal industry

Students should be familiar with the historic origin and development of major animal species involved in US agricultural production today. This includes:

- Worldwide geographic and/or cultural origin
- Domesticated trait development
- History of use of the species in the U.S.

*Sample Question: In what region of the world were sheep first domesticated?*

Students should be able to outline the development of the animal industry, including its products, services and careers. This also includes predicting trends and future development in the animal systems industry.

*Sample Questions: How has per person consumption of eggs in the U.S. changed in recent years? What factors have influenced the development of modern livestock breeds in the U.S.?*

### STANDARD 14

### 2 QUESTIONS

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Students should be familiar with a binomial system of nomenclature and be able to explain how animals are classified using Linnaeus' taxonomical classification system.

*Example Question: To which taxonomical "Class" or "Classes" does each of the major livestock and poultry animals belong?*

Student should be able to identify major animal species by common and scientific names.

*Example question: What is the scientific name for a horse?*

### STANDARD 15

### 5 QUESTIONS

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Students should be able to locate information on animal-industry careers.

*Sample Question: What type of career information can be found by visiting local a state employment services office?*

Student should be familiar with careers in the agriculture industry. This includes being familiar with the major sectors of the agriculture industry and jobs related to animal science available in each.

*Sample Question: What are two examples of animal science related jobs in the managers and financial specialists sector of agriculture?*

Students should be familiar with the entry, advancement, and training requirements for animal-industry related career categories.

*Sample Question: What educational degree is generally necessary for a person who would like a job as a social services professional within the field of animal science?*

**STANDARD 16****7 QUESTIONS**

Students should be able to practice basic safety when working with animal –related equipment and in an agricultural laboratory setting. This includes:

- Sources of safety hazards in livestock facilities and laboratories
- Best practices for employee safety training
- Best practices for location of safety equipment

*Sample Questions: What is an example of an electric shock hazard in a livestock barn? What safety equipment prevents buildup of toxic gases from manure pits in a modern livestock confinement building?*

Students should be familiar with common animal agriculture safety hazards and emergency procedures. This includes:

- Animal diseases and biosecurity
- Chemical safety
- Feed grain handling and storage
- Fire safety
- Heat and humidity safety
- Personal protective equipment
- Livestock confinement and handling

*Sample Question: What are the proper guidelines for storing farm chemicals, such as pesticides?*

Students should be familiar with animal behaviors as they relate to safe animal handling and animal restraint.

*Sample Question: What is the proper method for restraining cattle in order to administer vaccinations?*

Students should be familiar with the Occupational Safety and Health Act (OSHA) as it relates to the animal industry.

*Sample Question: What is an example of how employers can inform employees about rights and responsibilities under the Occupational Safety and Health Act?*

Students should be familiar with zoonoses and common zoonotic diseases.

**STANDARD 17****3 QUESTIONS**

Students should be familiar with normal and abnormal behavior for commercial livestock species, as well as best practices for monitoring livestock behavior.

*Sample Question: What are examples of normal behavior for swine?*

Students should be able to identify problems or changes in livestock based upon their behavior.

*Sample Question: What behaviors would indicate that a cow is in estrus?*

## STANDARD 18

## 8 QUESTIONS

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Students should be able to diagram a typical animal cell, identify the organelles, and explain the function of each.

*Sample Question: What cell organelle ultimately controls the cell's metabolism, growth, and reproduction?*

Students should be able to describe animal organs, including their locations, properties, and functions.

*Sample question: What is the function of the crop in the digestive system of poultry?*

Students should be able to explain the structure and function of various animal tissues, organ systems and body systems.

*Sample questions: Compare and contrast the three types of muscle found in the body. What is the function of the urinary system?*

Students should be able to compare and contrast the organ and body systems of different production animal species.

*Sample Question: What are the differences between the mammalian respiratory system and the avian respiratory system?*

Students should be able to explain how animal anatomy and physiology relate to the production and use of animals.

*Sample Question: How does the endocrine system impact livestock animal production?*

## STANDARD 19

## 5 QUESTIONS

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Students should be able to describe the male and female reproductive organs of the major animal species.

*Sample Question: Where are the testicles of male chickens located?*

Students should be able to describe the functions of major organs in the male and female reproductive systems.

*Sample Question: What is the function of the isthmus in the reproductive system of female chickens?*

## STANDARD 20

## 5 QUESTIONS

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Students should be able to identify dangers in working with animals, and describe safe handling procedures for working with the following animal species:

- Cattle
- Swine
- Horses
- Sheep
- Goats
- Poultry

*Sample Questions: Describe practices that make it easier to move hogs from one place to another? What best practices should be followed when saddling a horse? How should livestock facilities for each species be designed to prevent accidents?*

Students should be able to explain the implications of animal welfare and animal rights for animal agriculture.

*Sample Question: List some of the livestock production practices under attack by animal rights activists.*

## STANDARD 21

## 3 QUESTIONS

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Students should be familiar with agencies responsible for enforcing legislation regarding humane treatment and care of animals.

*Sample Questions: What division of the USDA is responsible for enforcing federal laws that address the humane treatment and care of animals?*

Students should be able to explain the federal laws governing animal care and use.

*Sample Questions: What is addressed in the standards of the Animal Welfare Act? What change was made in the 1985 amendment to the Animal Welfare Act?*

## STANDARD 22

## 2 QUESTIONS

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Student should be familiar with the trends in animal agriculture, and their impact on US and world economies.

*Sample question: How is the trend in sheep production expected to change in the next 10-20 years?*

Students should be familiar with government agencies responsible for regulating and supporting agriculture.

*Sample Questions: What federal government agencies are responsible for regulating food additives?*

Students should be familiar with federal laws and regulations for agricultural businesses.

*Sample Questions: What food safety regulations have been introduced into meat processing facilities in order to prevent food borne illness?*

## STANDARD 23

## 2 QUESTIONS

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Students should be able to explain the role of agriculture and agribusinesses in the US and global economies.

*Sample Questions: How has the decline in the number of farms in the U.S. impacted the number of jobs available in production agriculture, inputs, and processing?*

Students should be familiar with career opportunities in agribusiness and agriculture.

Students should be able to identify employer expectations and good worker skills.

*Sample Question: Compare and contrast appropriate and inappropriate employee behaviors.*

## ANIMAL SCIENCE AND SERVICES 3

### STANDARD 27

### 8 QUESTIONS

Students should be familiar with balanced rations. This includes:

- Explaining the importance of balanced rations
- Identifying considerations when balancing feed rations
- The ability to develop a balanced feed ration for a specific animal

*Example Questions: What factors must be considered when developing a balanced feed ration? What mineral is necessary in high amounts in a balanced ration for laying hens?*

Students should be familiar with feed additives in animal production. This includes:

- Types of feed additives and their purposes
- Benefits and risks associated with particular feed additives
- Proper uses of feed additives
- How feed additives are regulated in the US

*Example Question: Why are coccidiosis sometimes added to livestock rations?*

Students should be able to analyze and interpret feed labels used in animal production. This includes explaining feed label regulations.

*Example Question: List six things that must be on the label of all medicated feeds.*

Students should be familiar with hormones and growth promotants in animal production. This includes:

- Methods of administering hormones and growth promotants
- Benefits and risks associated with particular hormones and growth promotants
- Proper use of hormones and growth promotants
- How hormones and growth promotants are regulated in the US

*Example Question: What are the benefits of properly administered hormone implants in beef cattle production?*

### STANDARD 28

### 5 QUESTIONS

Students should be familiar with how age, size, life cycle, maturity, health status, and nutrition affect the reproductive efficiency of male and female animals.

*Example Question: What reproductive problem often occurs in bulls that are too fat?*

Students should be able to explain the importance of reproductive efficiency and cost-effectiveness in animal production.

Students should be able to evaluate and select animals for reproductive readiness. This includes selecting breeding animals based on the characteristics of the reproductive organs.

*Example Question: What is indicated when a gilt has a vulva with the tip turned upward (tipped)?*

Students should be able to evaluate reproductive problems that occur in animals. This includes making decisions about whether to treat or cull animals with reproductive problems.

## STANDARD 29

## 5 QUESTIONS

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Students should be able to describe the estrus cycle.

*Example Question: What are the signs of estrus in swine?*

Students should be familiar with breeding systems and breeding methods.

*Example Question: How does in vitro fertilization differ from artificial insemination?*

Students should be able to compare and contrast reproduction in production animal species.

*Example Question: What characteristics of reproduction in mammals make them different from poultry?*

Students should be able to properly care for breeding stock before, during and after parturition. Students should also be able to describe proper care for newborn animals.

*Example Question: How can pregnancy in rabbits be confirmed?*

## STANDARD 30

## 5 QUESTIONS

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Students should be familiar with proper methods and techniques for determining health of production animal species.

*Example Question: What is the best method to determine the respiration rate of a hog?*

Students should be able to identify common diseases, parasites and physiological disorders of production animals.

*Example Question: What are the symptoms shown by cattle suffering from Bovine Spongiform Encephalopathy (BSE)?*

Students should be able to treat common diseases, parasites and physiological disorders of production animals.

*Example Question: How is Avian Influenza in poultry treated?*

Students should be able to describe a plan to prevent the spread of common diseases and disorders among production animals.

*Example Question: What practices should be followed for dairy producers to effectively control mastitis in their herd?*

## STANDARD 31

## 8 QUESTIONS

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Students should be able to describe the proper methods for administering medications or drugs to animals. This includes oral, injectable, and topical medications.

*Example Question: Where on swine should intramuscular injections be given?*

Students should be able to safely dispose of biological materials.

*Example Question: How should biomedical waste be disposed of?*

Students should be familiar with different types of vaccines and their uses.

*Example Question: What is a modified live vaccine?*

**STANDARD 32****5 QUESTIONS**

Students should be able to evaluate and select an animal for optimal performance in growth and/or reproduction based on anatomical and physiological characteristics. This includes:

- Sheep
- Goats
- Beef Cattle
- Dairy Cattle
- Swine
- Poultry

*Example Question: What are characteristics of an ideal beef heifer? What tool can be used to estimate the expected size of a beef animal when it reaches maturity?*

**STANDARD 33****4 QUESTIONS**

Students should be familiar with equipment and techniques used when exhibiting animals in a livestock or poultry show. This includes grooming, training, and exhibition.

*Example Question: When exhibiting a dairy cow in a livestock show, what lead equipment should be used?*

Students should be able to describe grades of animals and animal products. This includes beef, pork, lamb and poultry.

*Example Question: What is grading of slaughter beef heifers and steers based upon?*

Students should be able to identify market outlets for livestock, and make decisions about what markets are most appropriate for selling a particular group of animals.

*Example Question: What factors should be considered by a producer when selecting a livestock market?*

**STANDARD 34****4 QUESTIONS**

Students should be familiar with the basic business records of a livestock production enterprise.

*Example Question: What are examples of noncash variable expenses in a beef production operation?*

Students should be able to maintain and analyze animal records. This includes understanding uses for and value of the records.

*Example Question: Explain the importance of a system of animal identification. What type of records should be kept for hogs at a feeder swine operation?*

**STANDARD 35****3 QUESTIONS**

Students should be able to explain the importance of biosecurity to the animal industry. This includes how biosecurity risks can impact the animal industry.

*Example Questions: What is biosecurity? How have historical animal disease outbreaks impacted the livestock industry?*

Students should be able to explain procedures necessary to ensure biosecurity in an production animal facility.

*Example Question: What biosecurity measures should be taken when sharing livestock equipment?*

Students should be familiar with agencies and individuals responsible for helping to ensure biosecurity at production animal facilities in the United States.

*Example Question: What federal agency is responsible for ensuring biosecurity at our international ports?*



**STANDARD 36****2 QUESTIONS**

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Students should be familiar with the purpose and use of the following agribusiness financial records:

- balance sheets
- budgets
- cash-flow statements
- income statements
- inventory reports
- profit and loss statements

*Sample Question: What is the term for a financial document that records the amount of product kept on hand, how many were sold, each item's cost, total sale, and profit?*

Students should be able to explain the purposes and structures of contracts, leases, deeds, and insurance policies for an agribusiness.

*Sample Question: How are the payments for an amortized loan structured?*

Students should know the advantages and disadvantages of agribusiness entrepreneurship.

*Sample Question: What is a major disadvantage of owning your own agribusiness?*

Students should be able to describe the five basic ways American business is organized. This includes:

- compare and contrast each method of doing business
- list advantages and disadvantages for each method of doing business

*Sample Question: What does the distribution function of business involve?*

**STANDARD 37****2 QUESTIONS**

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Students should be able to explain the definition of a cooperative and identify examples of cooperatives.

*Sample Question: Which type of cooperative receives products from its members and then resells those products for the best possible price?*

Students should be able to distinguish between the main types of cooperatives and their functions.

*Sample Question: What are the main types of cooperatives?*

Students should be able to list benefits of cooperatives.

*Sample Question: What is an advantage of selling products such as milk through a cooperative?*