# Animal Science Course No. 18101 Credit: 1.0

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| **Student name:**  |  | **Graduation Date:** |  |

Pathways and CIP Codes: Animal Science, Health, and Related Industries (01.0901); Diversified Agricultural Science (01.0000)

Course Description: **Technical Level:** Animal Production/Science courses impart information about the care and management of domestic and farm animals. These courses may cover animal nutrition, health, behavior, selection, reproduction, anatomy and physiology, facilities, product processing, and marketing. Students may study a particular species (swine, cattle, horses, fowl, sheep, etc.), or they may learn how to care for and maintain livestock as a more inclusive study.

Directions:The following competencies are required for full approval of this course. Check the appropriate number to indicate the level of competency reached for learner evaluation.

**RATING SCALE:**

4. Exemplary Achievement: Student possesses outstanding knowledge, skills or professional attitude.

3. Proficient Achievement:Student demonstrates good knowledge, skills or professional attitude. Requires limited supervision.

2. Limited Achievement:Student demonstrates fragmented knowledge, skills or professional attitude. Requires close supervision.

1. Inadequate Achievement:Student lacks knowledge, skills or professional attitude.

0. No Instruction/Training:Student has not received instruction or training in this area.

## Benchmark 1: Animal Origin

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Identify the origin, significance, distribution, and domestication of animal species. |  |
| 1.2 | Define major components of the animal industry. |  |

## Benchmark 2: Classify Animals

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Explain the importance of the binomial system of nomenclature. |  |
| 2.2 | Identify major animal species by common and scientific names. |  |

## Benchmark 3: Comparative Anatomy & Physiology

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 3.1 | Identify basic characteristics of animal cells, tissues, organs and body systems. |  |
| 3.2 | Diagram a typical animal cell and identify the organelles. |  |
| 3.3 | Describe the basic functions of animal cells in growth and reproduction. |  |
| 3.4 | Describe the properties, locations, functions, and types of animal tissues. |  |
| 3.5 | Describe the properties, locations, functions, and types of animal organs. |  |
| 3.6 | Describe the functions of the animal body systems and system components. |  |

## Benchmark 4: Selecting Animals

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 4.1 | Identify ways an animal’s health can be affected by anatomical and physiological disorders. |  |
| 4.2 | Create a program to develop an animal to its highest potential performance. |  |

## Benchmark 5: Prevention & Treatment of Animals

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 5.1 | Explain methods of determining animal health and disorders. |  |
| 5.2 | Identify common diseases, parasites and physiological disorders that affect animals. |  |
| 5.3 | Explain characteristics of causative agents and vectors of diseases and disorders in animals. |  |
| 5.4 | Explain the clinical significance of common considerations in veterinary treatments, such as aseptic techniques. |  |
| 5.5 | Identify and describe zoonotic diseases. |  |

## Benchmark 6: Biosecurity

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 6.1 | Explain the importance of biosecurity to the animal industry. |  |
| 6.2 | Identify current biosecurity threats to U.S. Agriculture. |  |
| 6.3 | Explain on-farm techniques used to mitigate biosecurity risks. |  |

## Benchmark 7: Formulate Feed Rations

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 7.1 | Compare and contrast common types of feedstuffs and the roles they play in the diets of animals. |  |
| 7.2 | Explain the importance of a balanced ration for animals. |  |
| 7.3 | Calculate a Pearson Square. |  |

## Benchmark 8: Feed Additives & Growth Promotants

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 8.1 | Explain the purpose and benefits of feed additives and growth promotants in animal production. |  |

## Benchmark 9: Male & Female Reproductive Systems

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 9.1 | Explain the male and female reproductive organs of the major animal species. |  |

## Benchmark 10: Breeding Readiness & Soundness

### Competencies

| **#** | **Description** | **rating** |
| --- | --- | --- |
| 10.1 | Explain how age, size, life cycle, maturity level and health status affect the reproductive efficiency of male and female animals. |  |
| 10.2 | Discuss the importance of efficient and economic reproduction in animals. |  |

## Benchmark 11: Scientific Principles in Breeding

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 11.1 | Explain genetic inheritance in agricultural animals. |  |
| 11.2 | Explain the concept of hybrid vigor. |  |
| 11.3 | Identify differences between genes, chromosomes, and DNA. |  |
| 11.4 | Discuss the differences between genotype and phenotype. |  |
| 11.5 | Explain the causes of genetic mutations and genetic diseases. |  |
| 11.6 | Define natural and artificial breeding methods. |  |
| 11.7 | Explain the use of quantitative breeding values (e.g., EPDs) in the selection of genetically superior breeding stock. |  |
| 11.8 | Explain the advantages of major reproductive management practices, including estrous synchronization, superovulation, flushing and embryo transfer. |  |
| 11.9 | Discuss the uses and advantages and disadvantages of natural breeding and artificial insemination. |  |

## Benchmark 12: Animal Products and Processing

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 12.1 | Identify and classify meat cuts from various livestock species. |  |
| 12.2 | Explain meat quality and yield factors for livestock and poultry. |  |
| 12.3 | Evaluate meat processing techniques of various livestock and poultry species. |  |
| 12.4 | Discuss meat inspection and safety. |  |
| 12.5 | Identify animal byproducts and their uses. |  |

## Benchmark 13: Animal Facilities and Handling

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 13.1 | Identify facilities needed to house and produce each animal species safely and efficiently. |  |
| 13.2 | Identify equipment and handling facilities used in modern animal production. |  |
| 13.3 | Discuss the dangers involved in working with animals. |  |
| 13.4 | Explain the implications of animal welfare and animal rights for animal agriculture. |  |

## Benchmark 14: Government Regulations & Standards

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 14.1 | List the general standards (e.g., environmental, zoning, construction) that must be met in facilities for animal production. |  |

## Benchmark 15: Reducing Environment Effects

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 15.1 | Evaluate the effects of animal agriculture on the environment. |  |

## Benchmark 16: Environment Conditions on Animals

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 16.1 | Identify optimal environmental conditions for animals. |  |

I certify that the student has received training in the areas indicated.

Instructor Signature:

For more information, contact:

CTE Pathways Help Desk

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