# Advanced Animal Science Course No. 18103 Credit: 1.0

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

Pathways and CIP Codes: **Animal Science, Health, and Related Industries (01.0901)**

Course Description: course This focus on the care and management of large animals. Animal nutrition, health, behavior, reproduction and breeding, anatomy and physiology, facilities, use of qualitative and quantitative analyses for decision making, facilities, handling and training, and grooming are typical areas of study. Course topics may include product processing and marketing.

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.

**Prerequisites: 18101 – Animal Science**

## Benchmark 1: Animal Origin

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Evaluate and describe characteristics of animals that developed in response to the animals’ environment and led to their domestication. |  |
| 1.2 | Outline the development of the animal industry and the resulting products, services and careers. |  |

## Benchmark 2: Classify Animals

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Explain how animals are classified using Linnaeus’s taxonomical classification system. |  |
| 2.2 | Compare and contrast the hierarchical classification of the major agricultural animal species. |  |
| 2.3 | Appraise and evaluate the economic value of animals for various applications in the agriculture industry. |  |

## Benchmark 3: Comparative Anatomy and Physiology

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 3.1 | Compare and contrast animal cells, tissues, organs and body systems. |  |
| 3.2 | Explain how the components and systems of animal anatomy and physiology relate to the production and use of animals. |  |
| 3.3 | Describe the functions of animal cell structures. |  |
| 3.4 | Detail the processes of meiosis and mitosis in animal growth, development, health and reproduction. |  |
| 3.5 | Explain the application of the processes of meiosis and mitosis to animal growth, development, health and reproduction. |  |
| 3.6 | Explain the relationship of animal tissues to growth, performance and health. |  |
| 3.7 | Explain the importance and uses made of animal tissues in the agriculture industry. |  |
| 3.8 | Compare and contrast organ types and functions among animal species. |  |
| 3.9 | Relate the importance of animals’ organs to the health, growth and reproduction of animals. |  |
| 3.10 | Compare and contrast body systems and system adaptations between animal species. |  |
| 3.11 | Explain the impact of animal body systems on performance, health, growth and reproduction. |  |

## Benchmark 4: Selecting Animals

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 4.1 | Compare and contrast desirable anatomical and physiological characteristics of animals within and between species.  |  |
| 4.2 | Evaluate and select animals to maximize performance based on anatomical and physiological characteristics that affect health, growth and reproduction.  |  |
| 4.3 | Assess an animal to determine if it has reached its optimal performance level based on anatomical and physiological characteristics. |  |

## Benchmark 5: Prevention & Treatment of Animals

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 5.1 | Perform simple health-check evaluations on animals.  |  |
| 5.2 | Diagnose illnesses and disorders of animals based on symptoms and problems caused by diseases, parasites, and physiological disorders.  |  |
| 5.3 | Evaluate preventive measures for controlling and limiting the spread of diseases, parasites, and disorders among animals. |  |
| 5.4 | Prepare animals, facilities and equipment for surgical and nonsurgical veterinary treatments and procedures.  |  |
| 5.5 | Explain the health risk of zoonotic diseases to humans and their historical significance and future implications. |  |

## Benchmark 6: Biosecurity

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 6.1 | Discuss procedures at the local, state and national levels to ensure biosecurity of the animal industry. |  |

## Benchmark 7: Formulate Feed Rations

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 7.1 | Determine the relative nutritional value of feedstuffs by evaluating their general quality and condition.  |  |
| 7.2 |  Select appropriate feedstuffs for animals based on factors such as economics, digestive system and nutritional needs.  |  |
| 7.3 | Appraise the adequacy of feed rations using data from the analysis of feedstuffs, animal requirements and performance.  |  |
| 7.4 | Formulate animal feeds based on nutritional requirements, using feed ingredients for maximum nutrition and optimal economic production. |  |
| 7.5 | Calculate multiple ingredient Pearson Squares. |  |

## Benchmark 8: Feed Additives & Growth Promotants

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 8.1 | Discuss how feed additives and growth promotants are administered and the precautions that should be taken. |  |

## Benchmark 9: Male & Female Reproductive Systems

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 9.1 | Describe the functions of major organs in the male and female reproductive systems. |  |
| 9.2 | Select breeding animals based on characteristics of the reproductive organs. |  |

## Benchmark 10: Breeding Readiness & Soundness

### Competencies

| **#** | **Description** | **rating** |
| --- | --- | --- |
| 10.1 | Summarize factors that lead to reproductive maturity.  |  |
| 10.2 | Evaluate reproductive problems that occur in animals. |  |

## Benchmark 11: Scientific Principles in Breeding

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 11.1 | Explain the advantages of using genetically superior animals in the production of animals and animal products.  |  |
| 11.2 | Explain the processes of natural and artificial breeding methods. |  |
| 11.3 | Compare and contrast quantitative breeding value differences between genetically superior animals and animals of average genetic value.  |  |
| 11.4 | Select animals based on quantitative breeding values for specific characteristics.  |  |
| 11.5 | Explain the processes of major reproductive management practices, including estrous synchronization, superovulation, flushing and embryo transfer.  |  |
| 11.6 | Explain the materials, methods and processes of artificial insemination. |  |

## Benchmark 12: Animal Products and Processing

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 12.1 | Discuss food safety protocols when processing meat and poultry products. |  |
| 12.2 | Develop a plan for a value-added meat product. |  |
| 12.3 | Explain meat harvesting and slaughter techniques. |  |
| 12.4 | Discuss traceability of meat products. |  |

## Benchmark 13: Safe Animal Handling

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 13.1 | Outline safety procedures for working with animals by species.  |  |
| 13.2 | Design programs that assure the welfare of animals and prevent abuse or mistreatment. |  |

## Benchmark 14: Animal Product Safety

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 14.1 | Discuss consumer concerns with animal production practices relative to human health.  |  |
| 14.2 | Explain why animal trace-back capability, using individual animal and farm identification systems, is important to producers and consumers. |  |

## Benchmark 15: Design Animal Facilities AS.07.01

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 15.1 | Critique designs for an animal facility and prescribe alternative layouts and adjustments for the safe and efficient use of the facility.  |  |
| 15.2 | Design an animal facility, focusing on animal requirements, efficiency, safety and ease of handling.  |  |
| 15.3 | Explain how modern equipment and handling facilities enhance the safe and economic production of animals. |  |

## Benchmark 16: Government Regulations & Standards AS.07.02

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 16.1 | Evaluate an animal facility to determine if standards have been met. |  |

## Benchmark 17: Reducing Environment Effects AS.08.01

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 17.1 | Outline methods of reducing the effects of animal agriculture on the environment. |  |

## Benchmark 18: Environment Conditions on Animals

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 18.1 | Describe the effects of environmental conditions on animal populations and performance. |  |

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

Instructor Signature:

For more information, contact:

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