# Agricultural and Environmental Systems Career Field

## Animal Anatomy and Physiology

**Subject Code: 010945**

**Course and Unit Descriptions**

**Course Description:**

Students will examine the structure and function of the major organ systems as well as the function and principle of blood flow in animals. Students will study internal and external anatomical parts, their functions, and will investigate the relationship among these parts and systems within the body of animal. Throughout the course, students will apply the internal functions of anatomical structures to the business and industry principles of the animal industry.

**Unit: Site and Personal Safety Procedures**

This unit will address the safety concerns and procedures of laboratory procedures in relation to the examination of animal parts.

**Outcome 1.12**

Site and Personal Safety Procedures: Follow site and personal safety procedures in specific situations with specialized tools and equipment, evaluate the situation, and take corrective action.

**Competency:**

1.12.1. Use Occupational Safety and Health Administration (OSHA) defined procedures for identifying employer and employee responsibilities, working in confined spaces, managing worker safety programs, using ground fault circuit interrupters (GFCIs), maintaining clearance, and boundaries and labeling.

1.12.5. Identify the location of emergency flush showers, eyewash fountains, Safety Data Sheets (SDSs), fire alarms, and exits.

1.12.6. Identify procedures for the handling, storage, and disposal of hazardous materials.

1.12.7. Select, use, store, maintain, and dispose of personal protective equipment (PPE), appropriate to job tasks, conditions, and materials.

1.12.8. Identify safety hazards and take corrective measures.

1.12.9. Identify, inspect, and use safety equipment appropriate for the task.

1.12.10. Follow established procedures for the administration of first aid and contact emergency medical personnel when necessary.

**Unit: External Anatomical Parts**

Students will learn the parts and functions of an animal external extremities and organs. They will identify how these parts and functions are vital in the care of animals and production animal products.

**Outcome 2.2**

Body Systems: Describe the interrelationships of animal body systems with growth, development, health, maintenance, reproduction, and economic production.

**Competency:**

2.2.1. Describe external anatomical parts and their functions within different species.

**Outcome 2.3.**

Care and Management: Apply animal care, management, and record procedures to ensure husbandry and welfare, including managing environmental conditions to ensure health and performance.

**Competency:**

2.3.14. Identify and recognize normal and abnormal dental structures and conditions.

**Outcome 5.15**

Animal Behavior: Apply management practices to assure animal welfare considering species-specific behaviors, human safety, social influences, public perception, and regulations associated with animal welfare.

**Competency:**

5.15.2 Describe the adaptations and special senses (e.g., sight, hearing, smell, touch) of animals and how they contribute to animal behavior.

**Unit: Integumentary System**

Students will learn the parts and functions of the integumentary systems of animals (e.g., skin, hair, nails, wool, etc.). They will identify how these parts and functions are vital in the care of animals and production animal products.

**Outcome 2.2**

Body Systems: Describe the interrelationships of animal body systems with growth, development, health, maintenance, reproduction, and economic production.

**Competency:**

2.2.9. Identify and describe the integumentary system (e.g. skin, hair, nails, wool, feathers, scales), related structures, functions, and cycles.

**Unit: Digestive System**

Students will learn the parts and functions of various digestive systems of animals. They will identify how these parts and functions are vital in the care of animals and production animal products.

**Outcome 2.2**

Body Systems: Describe the interrelationships of animal body systems with growth, development, health, maintenance, reproduction, and economic production.

**Competency:**

2.2.2. Compare and contrast the anatomical parts of the digestive system(s) and describe their physiology within different species.

**Unit: The Nervous System**

Students will learn the parts and functions of nervous systems of animals including the sympathetic and parasympathetic systems. They will identify how these parts and functions are vital in the care of animals and production animal products.

**Outcome 2.2**

Body Systems: Describe the interrelationships of animal body systems with growth, development, health, maintenance, reproduction, and economic production.

**Competency:**

2.2.3. Identify anatomical components of nerve tissue and the nervous system, including regions of the brain, spinal nerves, and the sympathetic and parasympathetic system, and describe their physiology.

**Unit: Skeletal System**

Students will learn the parts and functions of skeletal systems of animals including types of bones. They will identify how these parts and functions are vital in the care of animals and production animal products.

**Outcome 2.2**

Body Systems: Describe the interrelationships of animal body systems with growth, development, health, maintenance, reproduction, and economic production.

**Competency:**

2.2.4. Identify the anatomical components of the skeletal system, including the types and forms of bones, and describe their physiology.

**Outcome 2.4**

Recognizing Diseases and Disorders: Evaluate animal conditions for species-specific diseases and disorders to assess an animal’s health and welfare.

**Competency:**

2.4.2. Identify abnormalities in the skeleton, body form and functions, and identify the associated symptoms.

**Unit: Musculature System**

Students will learn the parts and functions of musculature systems of animals including types of muscles. They will identify how these parts and functions are vital in the care of animals and production animal products.

**Outcome 2.2**

Body Systems: Describe the interrelationships of animal body systems with growth, development, health, maintenance, reproduction, and economic production.

**Competency:**

2.2.5. Identify the anatomical components of the musculature systems, including striated, cardiac, and smooth muscle, and describe their physiology.

**Unit: Muscle and Bone Growth**

Students will learn the parts and functions of bone and muscle growth of animals. They will identify how these parts and functions are vital in the care of animals and production animal products.

**Outcome 2.2**

Body Systems: Describe the interrelationships of animal body systems with growth, development, health, maintenance, reproduction, and economic production.

**Competency:**

2.2.6. Compare and contrast bone growth, muscle growth, and fat deposition in relation to developmental patterns.

**Unit: Blood**

Students will learn the parts and functions of the production of blood as well as the physical characteristics and functions of blood. They will identify how these parts and functions as well as the components of blood are vital in the care of animals and production animal products.

**Outcome 2.2**

Body Systems: Describe the interrelationships of animal body systems with growth, development, health, maintenance, reproduction, and economic production.

**Competency:**

2.2.7. Describe the components of the cardiovascular system and their functions, including factors affecting blood flow.

2.2.8. Identify and describe the physical characteristics, components, and functions of blood.

**Unit: Cardiovascular System**

Students will learn the parts and functions of the cardiovascular system as well as the exchange of nutrients. They will identify how these parts and functions and nutrient exchange are vital in the care of animals and production animal products.

**Outcome 2.2**

Body Systems: Describe the interrelationships of animal body systems with growth, development, health, maintenance, reproduction, and economic production.

**Competency:**

2.2.7. Describe the components of the cardiovascular system and their functions, including factors affecting blood flow.

**Unit: Respiratory System**

Students will learn the parts and functions of the respiratory system. They will identify how these parts and functions are vital in the care of animals and production animal products.

**Outcome 2.2**

Body Systems: Describe the interrelationships of animal body systems with growth, development, health, maintenance, reproduction, and economic production.

**Competency:**

2.2.10. Identify and describe the function and components of the respiratory system and pulmonary ventilation and the factors influencing respiratory rates.

**Unit: Urinary and Excretory Systems**

Students will learn the parts and functions of the urinary and excretory system. They will identify how these parts and functions are vital in the care of animals and production animal products.

**Outcome 2.2**

Body Systems: Describe the interrelationships of animal body systems with growth, development, health, maintenance, reproduction, and economic production.

**Competency:**

2.2.11. Identify and describe the urinary system structures and functions, including excretion and osmoregulation.

**Unit: Reproductive System**

Students will learn the parts and functions of the male and female reproductive systems of animals. They will identify how these parts and functions are vital in the care of animals and production animal products.

**Outcome 2.2**

Body Systems: Describe the interrelationships of animal body systems with growth, development, health, maintenance, reproduction, and economic production.

**Competency:**

2.2.12. Compare and contrast between the male and female reproductive system, structures, and functions.

**Outcome 2.6**

Population Management: Manage reproduction practices in animal populations across habitats to achieve the desired outcomes and specific goals.

**Competency:**

2.6.1. Identify factors that lead to reproductive maturity and select animals for reproductive readiness.

2.6.3. Compare and select superior individuals based on breeding values and heritability of the desired traits.

2.6.4. Identify normal and abnormal signs of parturition and recommend appropriate management practices.

**Unit: Endocrine System and the Role of Hormones**

Students will learn the parts and functions of endocrine systems in animals along with the role hormones play in bodily functions. They will identify how these parts and functions are vital in the care of animals and production animal products.

**Outcome 2.2**

Body Systems: Describe the interrelationships of animal body systems with growth, development, health, maintenance, reproduction, and economic production.

**Competency:**

2.2.13. Describe the endocrine system, its structures and the role of hormones.

**Unit: Immune and Lymphatic Systems**

Students will learn the parts and functions of the immune and lymphatic systems of animals. They will identify how these parts and functions are vital in the care and overall health of animals and production animal products.

**Outcome 2.2**

Body Systems: Describe the interrelationships of animal body systems with growth, development, health, maintenance, reproduction, and economic production.

**Competency:**

2.2.14. Identify and describe the immune system and the lymphatic system’s role in immunity.