**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.

**Strand 1. Business Operations/21st Century Skills**

Learners apply principles of economics, business management, marketing and employability in an entrepreneur, manager and employee role to the leadership, planning, developing and analyzing of business enterprises related to the career field.

**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.

**Competencies**

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.

1.12.17. Identify symptoms of exposure to health-threatening environments (e.g., temperature; chemical noise, vibration, harshness [NVH] hazards).

*An “X” indicates that the pathway applies to the outcome.*

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| **Pathways** |  | Agribusiness and Production Systems | X | Animal Science and Management |  | Bioscience | | |  | Horticulture |
|  | Natural Resource Management |  | Power Technology | | |  |  | | |
| **Green Practices** |  | Green-specific |  | Context-dependent | | |  | Does not apply | | |

**Strand 2. Animal Science**

Learners apply principles of animal anatomy, physiology, genetics, behavior and nutrition to the research and development, selection and reproduction, health and management of animals in domestic and natural environments.

**Outcome: 2.2. Body Systems**

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

**Competencies**

2.2.1. Describe external anatomical parts and their functions.

2.2.2. Identify the anatomical parts of the digestive system and describe their physiology.

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.

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

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

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

2.2.7. Describe the physical characteristics, components and functions of blood.

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

2.2.9. Describe the integumentary system (e.g., skin, hair, nails, wool, feathers), related structures and functions.

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

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

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

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

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

2.2.15. Identify the anatomy and describe the physiology of the mammary system.

**Outcome: 2.4. Recognizing Diseases and Disorders**

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

**Competencies**

2.4.4. Assess genetic abnormalities in the skeleton, body form and body functions and identify the

symptoms associated.

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

**Outcome: 2.6. Population Management**

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

**Competencies**

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. Determine the factors that influence estrus, gestation and parturition and employ appropriate

management practices.

**Outcome: 2.7. Animal Behavior**

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

**Competencies**

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

*An “X” indicates that the pathway applies to the outcome.*

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| **Pathways** |  | Agribusiness and Production Systems | X | Animal Science and Management |  | Bioscience | | |  | Horticulture |
|  | Natural Resource Management |  | Power Technology | | |  |  | | |
| **Green Practices** |  | Green-specific |  | Context-dependent | | |  | Does not apply | | |