# Agricultural and Environmental Systems Career Field

# Animal Health

**Subject Code: 010915**

**Outcome & Competency Descriptions**

**Course Description:**

Students will examine causes, symptoms, and treatment of common diseases with emphasis on developing preventative health management plans. Topics will include the study of pathogens and classifying types of diseases and disorders. Students will perform animal health assessments and compare them to standard characteristics. Throughout the course, students will utilize principles of technology to manage information systems, and research issues affecting 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: 1.1. Employability Skills**

Develop career awareness and employability skills (e.g., face-to-face, online) needed for gaining and maintaining employment in diverse business settings.

**Competencies**

1.1.7. Apply problem-solving and critical-thinking skills to work-related issues when making decisions and formulating solutions.

**Outcome: 1.2. Leadership and Communications**

Process, maintain, evaluate and disseminate information in a business. Develop leadership and team building to promote collaboration.

**Competencies**

1.2.1. Extract relevant, valid information from materials and cite sources of information.

1.2.2. Deliver formal and informal presentations.

1.2.5. Communicate information (e.g., directions, ideas, vision, workplace expectations) for an intended audience and purpose.

1.2.6. Use proper grammar and expression in all aspects of communication.

1.2.7. Use problem-solving and consensus-building techniques to draw conclusions and determine next steps.

**Outcome: 1.3. Business Ethics and Law**

Analyze how professional, ethical and legal behavior contributes to continuous improvement in organizational performance and regulatory compliance.

**Competencies**

1.3.1. Analyze how regulatory compliance (e.g., United States Department of Agriculture [USDA], Food and Drug Administration [FDA], United States Department of Interior [USDI], Ohio Livestock Care Standards, water quality standards, local water regulations, building codes) affects business operations and organizational performance.

**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: 2.1. Nutrition**

Analyze, formulate, prepare, and administer a ration for a population of specific animal species based on the economics, nutrition, and availability of feedstuffs and evaluate the feed's effects on animals, and animal products.

**Competencies**

2.1.2. Describe the role of nutrients and the nutritional requirements of different animal life processes and species.

2.1.4. Identify and address major nutrient deficiency and toxicity symptoms.

2.1.8. Select and determine the feeding and watering practices and systems, based on the animal population, purpose, and requirement.

**Outcome: 2.2. Body Systems**

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

**Competencies**

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

**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.

**Competencies**

2.3.3. Determine the biotic and abiotic factors (e.g., air, ventilation) that impact on the animals’ environment.

2.3.4. Apply concepts of pest control and nuisance animal control, sanitation, and disinfection procedures for animals’ care and management.

2.3.5. Perform species-specific animal identification techniques for traceability and records.

2.3.8. Evaluate and perform animal care procedures aligned with industry standards throughout the life of the animal.

2.3.9. Monitor and evaluate the quality of an animal's habitat and implement corrective methods as needed.

2.3.10. Recognize common restraints and tack devices for handling including their use and adjustments.

2.3.11. Groom animals through brushing, bathing and therapeutic treatments.

2.3.12. Assess the nails and hooves of animals and understand the practice of trimming and treating for specific species.

2.3.13. Compare and contrast different standards of grooming and styling techniques for specific animal species and breeds.

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

**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**

2.4.1. Identify common infectious and noninfectious causes of diseases and disorders within different species.

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

2.4.3. Describe the clinical signs that are associated with an abnormality caused by environmental factors (e.g. heat stress, standing condition, air quality).

2.4.4. Assess clinical signs of animals and identify diseases caused by microorganisms (e.g., parasites, viruses, bacteria, fungi, protozoa).

2.4.5. Describe zoonotic diseases and explain the health risk on humans and animals.

2.4.10. Differentiate between active and passive immunities and identify immunization schedule per species.

**Outcome: 2.5. Animal Health**

Implement preventive measures, treatment and maintenance options for species-specific diseases and disorders to improve an animal’s health and welfare.

**Competencies**

2.5.1. Obtain and interpret an animal’s vitals.

2.5.2. Apply concepts of body condition scoring to assess an animal’s general health and nutrition status.

2.5.3. Recognize the preventative measures or treatments needed to maintain animal health.

2.5.4. Apply basic principles of first-aid.

2.5.5. Inventory, store, and dispose of pharmaceutical drugs by category, class, and label.

2.5.6. Describe the routes of administration for medications (oral, IM, IV, SQ) and the process of drug absorption, distribution, metabolism, withdrawal, and excretion.

2.5.7. Interpret and follow label directions for the dosage, route of administration, and withdrawal period.

2.5.8. Simulate the administration of drug treatments and vaccines, following quality assurance guidelines, and monitor common adverse effects and potential problems associated with administration.

2.5.9. Prepare a sterile surgical environment, prepare patients for surgery, and conduct post-operative procedures.

2.5.10. Describe advantages, disadvantages, and adverse side effects of commonly used preanesthetic and anesthetic agents.

2.5.11. Identify and prepare sterile surgical instruments commonly used for surgery and post-operative procedures.

**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.

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

2.6.8. Describe ethical and responsible animal population management practices (e.g., spaying, neutering, heat suppression, relocation, reintroduction, hunting, containment, culling, euthanasia).

**Strand 3. Biotechnology**

Learners engage in the scientific process, learn fundamental processes using modern tools and laboratory techniques, adhere to safety protocols, and bring a biotechnology product to the market.

**Outcome: 3.1. Research and Experiments**

Use scientific methodology to conduct problem-based studies, develop products, and interpret results.

**Competencies**

3.1.1. Design a research plan, including the significance of the problem, purpose, hypotheses, objectives, appropriate controls, independent variables, dependent variables, methods of study, and a list of materials.

3.1.2. Examine sources for credibility.

3.1.3. Apply sampling methods that appropriately represent the population and implement procedures for systematic data collection.

3.1.6. Create, interpret, and use tabular and graphical displays and describe the data.

3.1.8. Define the concepts of confidence intervals and significant figures.

3.1.10. Describe the relationships among variables using correlations and draw conclusions.

3.1.11. Draw conclusions based on observations and data analyses, recognizing that experimental results must be open to the scrutiny of others.

3.1.12. Prepare and present findings using scientific reports.

**Strand 5 Elements of Production**

Learners apply principles of practice related to the management and maintenance of food, agriculture, and natural resources systems.

**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.

**Competencies**

5.15.1. Understand social influences, public perception, and regulations that are associated with animal welfare.

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

5.15.3. Identify and describe the innate behavioral patterns of animals.

5.15.4. Describe social relationships involved in behavioral adjustment and adaptation (e.g., animal-to-animal and human-to-animal interaction).

5.15.5. Interpret an animal’s intent based on its vocalization, body posture, and chemical means of communication.

5.15.6. Recognize behavior abnormalities and recommend corrective action.

5.15.7. Humanely handle, restrain, and move animals.

5.15.8. Identify and describe the life expectancy and use of animals.

5.15.9. Identify and describe the impacts of animal welfare and handling on meat quality and food safety.

5.15.12. Examine an animal to evaluate its general condition.

**Outcome 5.16. Biosecurity**

Connect the sources and causes of contamination and develop the protocols to implement biosecurity procedures.

**Competencies**

5.16.2. Identify activities and biological agents that contribute to the risk of acquiring or preventing a specific disease.

5.16.4. Assess a facility's biosecurity, classify the level of risk, and recommend improvements.

5.16.5. Implement biosecurity procedures to prevent cross-site contamination (e.g., proper use and disposal of personal protective equipment [PPE] from site to site, vehicle cleaning between farms and processing site).

5.16.6. Screen and test animals and plant products for infectious agents or contamination.

5.16.7. Select bio-containment practices (e.g., quarantine, eradicate, showering into facilities) to manage pests and diseases.