**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 to standard characteristics. Throughout the course, students will utilize principles of technology to manage information systems, and research issues affecting the 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.

*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: 2.1. Nutrition**

Analyze, formulate, prepare and administer a ration for a population of specific animal species based on economic, nutrition and availability of feed and evaluate its effects on animals.

**Competencies**

2.1.2. Determine 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.

**Outcome: 2.2. Body Systems**

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

**Competencies**

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

**Outcome: 2.3. Care and Management**

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

**Competencies**

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

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

2.3.9. Evaluate and perform animal care procedures throughout the life of the animal.

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

2.3.12. Groom animals through brushing and bathing.

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

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

**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 general infectious and noninfectious causes of diseases and disorders.

2.4.2. Examine an animal to evaluate its general condition.

2.4.3. Investigate and appraise signs of pain, distress, allergic reactions and lameness.

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

symptoms associated.

2.4.7. Identify and describe zoonotic diseases.

2.4.8. Explain the health risk of zoonotic diseases on humans and their historical significance and future implications.

2.4.9. Implement disease prevention methods and procedures.

2.4.13. Determine types of immunity and immune responses and simulate the administration of species-specific immunizations to maintain overall health.

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

**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 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.

**Outcome: 2.6. Population Management**

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

**Competencies**

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

**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**

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

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

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

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

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

communication.

2.7.6. Recognize behavior abnormalities and employ corrective action.

2.7.7. Handle, restrain and move animals, while ensuring the safety of the animals and their handlers.

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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 3. Biotechnology**

Learners apply the skills and knowledge of interpreting laboratory requests, using protective clothing and hazardous material containment, specimen collection procedures, a variety of laboratory testing and techniques, and maintenance of laboratory equipment and supplies.

**Outcome: 3.8. Research and Experiments**

Conduct a problem-based study, applying scientific methodology and using descriptive statistics to communicate and support predictions and conclusions.

**Competencies**

3.8.1. Identify research problems and structure a statistical experiment, simulation or study related to the problem.

3.8.2. Design a research plan, including the significance of the problem, purpose, variables, hypotheses, objectives, methods of study and a list of materials.

3.8.3. Distinguish between dependent, independent and control variables in an experiment.

3.8.4. Establish and implement procedures for systematic collection, organization and use of data.

3.8.5. Select and apply sampling methods that appropriately represent the population to be studied.

3.8.7. Document results of the experiment in a laboratory notebook, including a statement of purpose, experimental designs, observations, results, conclusions and next steps.

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

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

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

3.8.12. Prepare and present findings using scientific reports.

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| **Green Practices** |  | Green-specific |  | Context-dependent | | |  | Does not apply | | |

**Strand 7. Food Science**

Learners apply principles of biology, chemistry and physics to the research, development, production, processing and distribution of food products meeting quality assurance standards in a system that is safe and secure.

**Outcome: 7.7. Biosecurity**

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

**Competencies**

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

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

7.7.5. 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 farm and processing site).

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

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

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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 | | |