**Course Description:**

Students will apply responsible animal science principles and routine husbandry practices to captive animal populations. Learners will apply knowledge of animal behavior, welfare, and husbandry principles to enhance exhibit design, animal enrichment and training plans, and educational engagement programs. Emphasis will be given to data collection and research techniques. Students will apply principles of responsible population control, disease risk and management, and problem-solving/action planning techniques.

**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**

1.1.1. Identify the knowledge, skills and abilities necessary to succeed in careers.

1.1.2. Identify the scope of career opportunities and the requirements for education, training, certification, licensure and experience.

**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.

1.3.2. Follow protocols and practices necessary to maintain a clean, safe and healthy work environment.

1.3.3. Use ethical character traits consistent with workplace standards (e.g., honesty, personal integrity, compassion, justice).

1.3.4. Identify how federal and state consumer protection laws affect products and services.

1.3.5. Access and implement safety compliance measures (e.g., quality assurance information, safety data sheets [SDSs], product safety data sheets [PSDSs], United States Environmental Protection Agency [EPA], United States Occupational Safety and Health Administration [OSHA]) that contribute to the continuous improvement of the organization.

**Outcome: 1.4. Knowledge Management and Information Technology**

Demonstrate current and emerging strategies and technologies used to collect, analyze, record and share information in business operations.

**Competencies**

1.4.1. Use office equipment to communicate (e.g., phone, radio equipment, fax machine, scanner, public address systems).

1.4.2. Select and use software applications to locate, record, analyze and present information (e.g., word processing, e-mail, spreadsheet, databases, presentation, Internet search engines).

1.4.3. Verify compliance with security rules, regulations and codes (e.g., property, privacy, access, accuracy issues, client and patient record confidentiality) pertaining to technology specific to the industry pathway.

1.4.5. Use information technology tools to maintain, secure and monitor business records.

**Outcome: 1.5. Global Environment**

Evaluate how beliefs, values, attitudes and behaviors influence organizational strategies and goals.

**Competencies**

1.5.2. Describe how cultural intelligence skills influence the overall success and survival of an organization.

1.5.4. Recognize barriers in cross-cultural relationships and implement behavioral adjustments.

**Outcome: 1.6. Business Literacy**

Develop foundational skills and knowledge in entrepreneurship, financial literacy and business operations.

**Competencies**

1.6.1. Identify business opportunities.

1.6.2. Assess the reality of becoming an entrepreneur, including advantages and disadvantages (e.g., risk versus reward, reasons for success and failure).

1.6.3. Explain the importance of planning your business.

*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**

2.1.3. Analyze the nutritional content and quality of feeds.

2.1.6. Determine feed efficiency and value in relation to the cost, quality and availability of feeds.

2.1.7. Formulate and prepare rations and diets for production, specialty markets and special diets.

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

**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**

2.3.1. Identify species-specific terminology based on gender and age.

2.3.2. Identify, classify, evaluate and select animal species or breeds for a desired outcome.

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.

2.3.5. Perform species-specific animal identification techniques (e.g., chipping, tagging, branding, notching, tattooing).

2.3.6. Use identification techniques for record keeping and traceability.

2.3.7. Estimate an operation’s or environment's carrying capacity and its impact on animal health.

2.3.8. Identify and recognize predator-prey relationships and implement control measures.

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.

2.3.11. Recognize common restraints and tack devices, including their use and adjustment.

**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**

2.4.2. Examine an animal to evaluate its general condition.

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.

**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.

2.6.2. Compare and select superior individuals based on phenotype.

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.

2.6.5. Manipulate an animal’s reproductive processes to support breeding (e.g., sex-sorted semen, heat synchronization, nutritional flushing, light cycling).

2.6.6. Evaluate and employ breeding methods (e.g., artificial insemination, embryo transfer, natural

selection, selective breeding, invitro fertilization, cloning).

2.6.7. Describe nutritional and environmental influences during different stages of gestation.

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.

*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 | | |