

# Animal Systems (2023)

## 1.0: INTEGRATE CAREER AND TECHNICAL STUDENT ORGANIZATIONS (CTSOs) 1.0

### 1 1.1: Explore the History and Organization of CTSOs 1.1

- 1 Discuss the requirements of CTSO participation/involvement as described in Carl D. Perkins Law (Level 1 (L1), Level 2 (L2), Complementary (C)) 1.1.1
  - 2 Research nationally recognized CTSOs (L1, L2, C) 1.1.2
  - 3 Investigate the impact of federal and state government regarding the progression and operation of CTSOs (e.g., Federal Statutes and Regulations, Nevada Administrative Code [NAC], Nevada Revised Statutes [NRS]) (L1, L2, C) 1.1.3
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### 2 1.2: Develop Leadership Skills 1.2

- 1 Discuss the purpose of parliamentary procedure (L1, L2, C) 1.2.1
  - 2 Demonstrate the proper use of parliamentary procedure (L1, L2, C) 1.2.2
  - 3 Differentiate between an office and a committee (L1, L2, C) 1.2.3
  - 4 Discuss the importance of participation in local, regional, state, and national conferences, events, and competitions (L1, L2, C) 1.2.4
  - 5 Participate in local, regional, state, or national conferences, events, or competitions (L1, L2, C) 1.2.5
  - 6 Describe the importance of a constitution and bylaws to the operation of a CTSO chapter (L1, L2, C) 1.2.6
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### 3 1.3: Participate in Community Service 1.3

- 1 Explore opportunities in community service-related work-based learning (WBL) (L1, L2, C) 1.3.1
- 2 Participate in a service learning (program related) and/or community service project or activity (L1, L2, C) 1.3.2
- 3 Engage with business and industry partners for community service (L1, L2, C) 1.3.3

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**4 1.4: Develop Professional and Career Skills 1.4**

- 1 Demonstrate college and career readiness (e.g., applications, resumes, interview skills, presentation skills) (L1, L2, C) 1.4.1
- 2 Describe the appropriate professional/workplace attire and its importance (L1, L2, C) 1.4.2
- 3 Investigate industry-standard credentials/certifications available within this Career Cluster™ (L1, L2, C) 1.4.3
- 4 Participate in authentic contextualized instructional activities (L1, L2, C) 1.4.4
- 5 Demonstrate technical skills in various student organization activities/events (L1, L2, C) 1.4.5

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**5 1.5: Understand the Relevance of Career and Technical Education (CTE) 1.5**

- 1 Make a connection between program standards to career pathway(s) (L1, L2, C) 1.5.1
- 2 Explain the importance of participation and completion of a program of study (L1, L2, C) 1.5.2
- 3 Promote community awareness of local student organizations associated with CTE programs (L1, L2, C) 1.5.3

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**2.0: EXAMINE THE ROLE OF AGRICULTURE IN SOCIETY 2.0****1 2.1: Recognize the Role of Agriculture in Society 2.1**

- 1 Assess how agriculture supports daily life (L1) 2.1.1
- 2 Describe the importance and value of global agricultural trade (L1) 2.1.2
- 3 Describe the various components of the agriculture industry (e.g., value chain) (L1) 2.1.3
- 4 Discuss the role of modern agriculture in basic human needs by identifying products used to provide food, clothing, and shelter (e.g., world food security) (L1) 2.1.4
- 5 Discuss the role of diverse cultures in developing American agriculture practices (L1) 2.1.5

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**2 2.2: Understand the History of Production Agriculture 2.2**

- 1 Compare agriculture's role in developing civilizations (L1) 2.2.1
- 2 Organize the major technological developments that have occurred in agriculture (L1) 2.2.2
- 3 Interpret historical events and trends that have led to the development of today's agriculture industry (L1) 2.2.3

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### **3 2.3: Explore the World Food Supply** 2.3

- 1 Analyze the impact of agriculture on the local, state, national, and world economies (L1) 2.3.1
  - 2 Explain the role of government in the world's food supply (L1) 2.3.2
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## **3.0: DEVELOP LEADERSHIP AND COMMUNICATION SKILLS THROUGH PARTICIPATION IN FFA** 3.0

### **1 3.1: Understand the History and Organization of FFA** 3.1

- 1 Summarize how, when, and why the National FFA Organization was founded (L1) 3.1.1
  - 2 Describe the mission and strategies, colors, motto, parts of the emblem, and organizational structure of the National FFA Organization (L1) 3.1.2
  - 3 Recite and explain the meaning of the FFA Creed (L1) 3.1.3
  - 4 Explain the purpose of FFA's Program of Activities and describe its committee structure (L1) 3.1.4
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### **2 3.2: Understand the Opportunities in FFA** 3.2

- 1 Describe how FFA develops leadership skills, personal growth, and career success (L1) 3.2.1
  - 2 Identify major state and national activities and awards available to FFA members (L1) 3.2.2
  - 3 Compete in at least one Leadership or Career Development Event at the local level (L1) 3.2.3
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### **3 3.3: Properly use Skills in Parliamentary Procedure** 3.3

- 1 List three reasons why parliamentary procedure is used in meetings (L1) 3.3.1
  - 2 List five classifications of motions (L1) 3.3.2
  - 3 Properly perform ten procedures of parliamentary law (L1) 3.3.3
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### **4 3.4: Understand the Importance of School and Community Awareness** 3.4

- 1 Discuss the meaning and importance of community service and some agriculture associated organizations (L1) 3.4.1
  - 2 Explain how FFA members can become involved in community improvement and development, and plan an activity (L1) 3.4.2
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### **5 3.5: Recognize the Traits of Effective Leaders and Participate in** 3.5

- 1 Leadership Training Through Involvement in FFA 3.5.1
  - 2 Expand leadership experience by serving as a chapter officer or on a committee (L2) 3.5.2
  - 3 Participate in a career development event at the local level or above (L2) 3.5.3
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### **6 3.6: Understand the Importance of School and Community Awareness** 3.6

- 1 Participate in a school improvement or community development project (L2) 3.6.1
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**4.0: DEVELOP A SUPERVISED AGRICULTURAL EXPERIENCE (SAE) PROGRAM** 4.0

**1 4.1: Understand the Benefits of an SAE Program** 4.1

- 1 Participate in a foundational SAE (L1) 4.1.1
  - 2 Explore an immersion SAE (L1) 4.1.2
  - 3 Describe the value of SAE programs (L1) 4.1.3
  - 4 Compare and contrast the six types of SAEs (L1) 4.1.4
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**2 4.2: Understand the Benefits of SAE Records** 4.2

- 1 Analyze the importance of keeping records of an SAE program (Agricultural Experience Tracker [AET©]) (L1) 4.2.1
  - 2 Investigate the types of financial records needed to support a chosen SAE program (L1) 4.2.2
  - 3 Demonstrate the procedures for making entries in The AET© (L1) 4.2.3
  - 4 Reflect on The AET© Annual Review (L1) 4.2.4
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**3 4.3: Maintain a Supervised Agricultural Experience** 4.3

- 1 Accurately maintain SAE record books (L2) 4.3.1
  - 2 Apply for proficiency award related to SAE program area (L2) 4.3.2
  - 3 Actively pursue necessary steps to receive higher degrees in FFA (L2) 4.3.3
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**5.0: EXPLORING SCIENTIFIC INVESTIGATION IN AGRICULTURE** 5.0

**1 5.1: Design and Conduct Agricultural Research** 5.1

- 1 Explain that agriculture is a science (L1) 5.1.1
  - 2 List the steps of the scientific method (L1) 5.1.2
  - 3 Explain the steps in conducting research in agriculture and design an appropriate research project (L1) 5.1.3
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**2 5.2: Understand Scientific Measurement** 5.2

- 1 Describe the systems of measurement used in this country (L1) 5.2.1
  - 2 Determine the metric prefixes and units used for measuring length, volume weight, temperature, and area (L1) 5.2.2
  - 3 Convert from one system of units to another system of units (L1) 5.2.3
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**3 5.3: Use Laboratory Tools and Equipment** 5.3

- 1 Identify and properly use personal protection equipment (PPE) (L1) 5.3.1
  - 2 Describe safety in agriscience laboratories (L1) 5.3.2
  - 3 Demonstrate proper use of common agriscience equipment (L1) 5.3.3
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**4 5.4: Explore Careers in Agricultural Science** 5.4

- 1 Identify basic career information related to agricultural science (L1) 5.4.1
  - 2 Research several agricultural science careers (L1) 5.4.2
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## **6.0: DEVELOP AN UNDERSTANDING OF ANIMAL SCIENCE** 6.0

### **1 6.1: Understanding Cellular Biology** 6.1

- 1 Explain a cell's role and compare and contrast the types of cells (prokaryotic and eukaryotic) (L1) 6.1.1
  - 2 Analyze the components of an animal cell and explain their functions (L1) 6.1.2
  - 3 Analyze the components of a plant cell and explain their functions (L1) 6.1.3
  - 4 Differentiate between a plant and animal cell (L1) 6.1.4
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### **2 6.2: Explore and Evaluate the Livestock Industry** 6.2

- 1 Define terms used to describe beef cattle, dairy, sheep, swine, and horses and identify their external parts (L1) 6.2.1
  - 2 Compare and contrast the common breeds of livestock (L1) 6.2.2
  - 3 Identify and describe methods used to select different species of livestock (L1) 6.2.3
  - 4 Evaluate livestock in a systematic, organized manner according to industry standards (L1) 6.2.4
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### **3 6.3: Explore Reproductive Physiology and Breeding Systems** 6.3

- 1 Compare and explain common breeding systems used in livestock production (L1) 6.3.1
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### **4 6.4: Understand Animal Nutrition** 6.4

- 1 Identify the major parts and describe the functions of the digestive systems in livestock (L1) 6.4.1
  - 2 Explore the major nutrients and their importance to animals (L1) 6.4.2
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### **5 6.5: Understand Animal Health Management** 6.5

- 1 Measure animal health through visual and tangible observations (L1, L2) 6.5.1
  - 2 Identify good animal health management practices (L1, L2) 6.5.2
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### **6 6.6: Explore Careers in Animal Science** 6.6

- 1 Identify basic career information related to animal science (L1) 6.6.1
  - 2 Research several animal science careers (L1) 6.6.2
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## 7.0: UNDERSTANDING PLANT SCIENCE 7.0

### 1 7.1: Understand Plant Anatomy 7.1

- 1 Identify and describe the parts of a flower (L1) 7.1.1
  - 2 Explain the purpose of a flower (L1) 7.1.2
  - 3 Identify and describe the parts of a root (L1) 7.1.3
  - 4 Explain the purpose of a root (L1) 7.1.4
  - 5 Identify and describe the parts of a stem (L1) 7.1.5
  - 6 Explain the purpose of a stem (L1) 7.1.6
  - 7 Identify and describe the parts of a leaf (L1) 7.1.7
  - 8 Explain the purpose of a leaf (L1) 7.1.8
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### 2 7.2: Understand Plant Physiology 7.2

- 1 Describe the process of photosynthesis (L1) 7.2.1
  - 2 Describe the process of cellular respiration (L1) 7.2.2
  - 3 Explain the relationship between photosynthesis and respiration (L1) 7.2.3
  - 4 Summarize why photosynthesis and respiration are important to human beings (L1) 7.2.4
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### 3 7.3: Understand Plant Propagation 7.3

- 1 Explain the importance of plant propagation (L1) 7.3.1
  - 2 Explore the basic principles of crop production (food, forage, and fiber) (L1) 7.3.2
  - 3 Identify and list the major parts of a seed (L1) 7.3.3
  - 4 List the function of each major part of a seed (L1) 7.3.4
  - 5 Describe and observe the process of seed germination (L1) 7.3.5
  - 6 Describe the process of fertilization and pollination (L1) 7.3.6
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### 4 7.4: Understand Plant Nutrition and Health 7.4

- 1 Differentiate between macronutrients and micronutrients (L1) 7.4.1
  - 2 Describe pH and how it is modified (L1) 7.4.2
  - 3 Describe the components of a fertilizer (e.g., nitrogen, phosphorus, potassium [NPK]) (L1) 7.4.3
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### 5 7.5: Explore Careers in Plant Science 7.5

- 1 Identify basic career information related to plant science (L1) 7.5.1
  - 2 Research several plant science careers (L1) 7.5.2
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## 8.0: EXPLORING SOIL SCIENCE 8.0

### 1 8.1: Understand Soil Texture and Structure 8.1

- 1 List the components of soil (L1) 8.1.1
  - 2 Describe the concept of soil texture and its importance (L1) 8.1.2
  - 3 Classify the texture of a soil sample (L1) 8.1.3
  - 4 Identify various soil structures, their formation, and importance in agriculture production (L1) 8.1.4
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### 2 8.2: Explore Careers in Soil Science 8.2

- 1 Identify basic career information related to soil science (L1) 8.2.1
  - 2 Research several soil science careers (L1) 8.2.2
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## 9.0: EXPLORING ORNAMENTAL HORTICULTURE 9.0

### 1 9.1: Explore Areas of Ornamental Horticulture 9.1

- 1 Explore the Basic Principles of Landscape Design (L1) 9.1.1
  - 2 Explore the Basic Principles of Greenhouse Management (L1) 9.1.2
  - 3 Explore the Basic Principles of Floriculture (L1) 9.1.3
  - 4 Explore the Basic Principles of Nursery Crop Production (e.g., gardening, cut flowers) (L1) 9.1.4
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### 2 9.2: Explore Careers in Ornamental Horticulture 9.2

- 1 Identify basic career information related to ornamental horticulture science (L1) 9.2.1
  - 2 Research several ornamental horticulture science careers (e.g., landscape, greenhouse management, horticulture) (L1) 9.2.2
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## 10.0: EXPLAIN BASIC SALES AND MARKETING CONCEPTS FOR AGRICULTURAL PRODUCTS 10.0

### 1 10.1: Demonstrate an Understanding of Agricultural Marketing 10.1

- 1 Identify current agriculture product marketing trends (L1) 10.1.1
  - 2 Compare and contrast marketing and sales (L1) 10.1.2
  - 3 Define the purpose for developing a marketing plan (L1) 10.1.3
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### 2 10.2: Understand the Principles of Agricultural Sales 10.2

- 1 Identify the characteristics of an effective salesperson, and define related terms (L1) 10.2.1
  - 2 Compare and contrast the relationship between marketing and selling (L1) 10.2.2
  - 3 Describe the customer buying process (L1) 10.2.3
  - 4 Identify the six steps involved in the selling process (L1) 10.2.4
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### 3 10.3: Explore Careers in Sales and Marketing 10.3

- 1 Identify basic career information related to sales and marketing (L1) 10.3.1
  - 2 Research several sales and marketing careers (L1) 10.3.2
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**11.0: UNDERSTAND THE RELATIONSHIP BETWEEN AGRICULTURE AND NATURAL RESOURCE MANAGEMENT** 11.0

**1 11.1: Explore Types of Natural Resources** 11.1

- 1 Define and identify types of natural resources (L1) 11.1.1
  - 2 Distinguish between renewable and nonrenewable resources (L1) 11.1.2
  - 3 Compare the difference between inexhaustible and exhaustible resources (L1) 11.1.3
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**2 11.2: Understand Human Demand on Natural Resources** 11.2

- 1 Recognize how humans use natural resources (L1) 11.2.1
  - 2 Identify the urban and rural impacts of natural resource use (L1) 11.2.2
  - 3 Analyze the impact of recycling and reusing resources (L1) 11.2.3
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**3 11.3: Comprehend Natural Resource Conservation** 11.3

- 1 Compare and contrast conservation and preservation (L1) 11.3.1
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**4 11.4: Understand Ecology and Ecosystems** 11.4

- 1 Define ecology and ecosystems (L1) 11.4.1
  - 2 Explain natural selection and succession (L1) 11.4.2
  - 3 Identify biomes and explain ecosystem diversity (L1) 11.4.3
  - 4 Diagram and explain the nitrogen, phosphorus, carbon, and water cycle (L1) 11.4.4
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**5 Explore Principles of Rangeland Management** 11.5

- 1 Define range (L1) 11.5.1
  - 2 Define multiple use (L1) 11.5.2
  - 3 Identify Nevada's ecoregions (Sierra Nevada, Northern Basin and Range, Central Basin and Range, and Mojave Basin and Range) (L1) 11.5.3
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**6 11.6: Explore Careers in Natural Resource Management** 11.6

- 1 Identify basic career information related to natural resource management (L1) 11.6.1
  - 2 Research several natural resource management careers (L1) 11.6.2
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**12.0: EXPLORE THE STRUCTURE AND FUNCTION OF THE MAJOR ORGAN SYSTEMS OF LIVESTOCK** 12.0

**1 12.1: Categorize the Anatomy and Physiology of Different Animal Species** 12.1

- 1 Describe how the animal body is organized in terms of cells, tissues, organs, and organ systems (L2) 12.1.1
- 2 List and briefly describe the major organ systems found in vertebrate animals (L2) 12.1.2
- 3 Relate anatomy and physiology to livestock and small animal production (L2) 12.1.3

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**2 12.2: Examine the Anatomy and Physiology of the Musculoskeletal System** 12.2

- 1 Examine and describe the functions of the musculoskeletal system (L2) 12.2.1
- 2 Identify and recall the names of components of the musculoskeletal system found in livestock and companion animals (L2) 12.2.2

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**3 12.3: Explore the Integumentary and Urinary Systems** 12.3

- 1 Explain the integumentary system, and diagram the two layers of skin (L2) 12.3.1
- 2 Identify components of the urinary system, examine its role, and explain the function of the kidneys, ureters, urinary bladder, and urethra (L2) 12.3.2

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**4 12.4: Analyze the Endocrine and Nervous Systems** 12.4

- 1 Identify and describe the functions of the glands that compose the endocrine system (L2) 12.4.1
- 2 Identify and describe the functions of the organs that compose the nervous system (L2) 12.4.2
- 3 Describe the effect of hormones on behavior (L2) 12.4.3

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**5 12.5: Examine the Circulatory and Respiratory System** 12.5

- 1 Identify the components of the respiratory system and describe the functions of the organs that compose the respiratory system (L2) 12.5.1
- 2 Identify the components of the circulatory system, including identification of all major veins and arteries, and describe the functions of the organs that compose the circulatory system (L2) 12.5.2
- 3 Define blood and describe the cell structure and components of blood (L2) 12.5.3
- 4 Explain blood's role in the exchange of materials throughout the body (L2) 12.5.4

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**6 12.6: Differentiate the Major Parts of the Digestive System** 12.6

- 1 Describe the structures and functions of a monogastric digestive system (L2) 12.6.1
  - 2 Describe the structures and functions of a ruminant digestive system (L2) 12.6.2
  - 3 Describe the structures and functions of a pseudo-ruminant digestive system (L2) 12.6.3
  - 4 Investigate the differences of species based on digestive systems and diet types (L2) 12.6.4
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**13.0: EXPLORE  
NUTRITIONAL  
REQUIREMENTS FOR  
LIVESTOCK** 13.0

**1 13.1: Compare and Contrast Feedstuffs for Livestock** 13.1

- 1 Explain the functions of feed and how they supply energy to livestock (L2) 13.1.1
  - 2 Identify the various feed types and characteristics (L2) 13.1.2
  - 3 Compare and contrast the types of feedstuffs (roughages, concentrates, supplements/additives, and byproducts) (L2) 13.1.3
  - 4 Distinguish between good quality and poor-quality feedstuffs, and examine how processing methods (grinding, rolling, palletizing, etc.) improve palatability (L2) 13.1.4
  - 5 Examine storage and feeding practices of common feedstuffs (L2) 13.1.5
  - 6 Examine the role of feed additives and their impact on animal growth (L2) 13.1.6
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**2 13.2: Create Balanced Livestock Feed Rations** 13.2

- 1 Identify the steps in balancing rations (L2) 13.2.1
  - 2 Discuss the importance of feed analysis (L2) 13.2.2
  - 3 Discuss how nutritional information is used in developing rations (L2) 13.2.3
  - 4 Develop balanced rations using the Pearson Square method (L2) 13.2.4
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**14.0: EXPLORING THE  
LIVESTOCK  
REPRODUCTIVE  
SYSTEMS** 14.0

**1 14.1: Compare Anatomy and Physiology of Livestock Reproductive Systems** 14.1

- 1 Define and explain the steps of spermatogenesis and oogenesis, and describe sperm and egg cellular characteristics (L2) 14.1.1
  - 2 Explain the phases of reproductive development in the life of an animal, and determine an animal's readiness for breeding (L2) 14.1.2
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**2 14.2: Compare Natural Animal Reproduction** 14.2

- 1 Construct a diagram of the phases of the estrous cycle and identify estrus in relation to the heat cycle (L2) 14.2.1
- 2 Describe the process and purpose of fertilization, the gestation length, and parturition in livestock species (L2) 14.2.2
- 3 Discuss the events that occur leading up to, during, and after parturition and describe the problems that may be encountered during parturition (L2) 14.2.3

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### **3 14.3: Analyze Animal Reproduction Management** 14.3

- 1 Identify common reproductive diseases that affect animals and determine appropriate prevention and treatment methods (L2) 14.3.1
  - 2 Discuss reproduction management practices, including artificial insemination and natural breeding, and determine how they affect reproductive performance (L2) 14.3.2
  - 3 Compare and contrast common breeding systems used in livestock production (L2) 14.3.3
  - 4 Research the advancement of reproductive technology (e.g., estrous synchronization, semen sexing, embryo transfer, cloning, and genetic engineering) (L2) 14.3.4
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### **4 14.4: Explain the Process of Lactation** 14.4

- 1 Define lactation, and describe the structure and function of the mammary glands of common agricultural animals (L2) 14.4.1
  - 2 Describe the components of milk and colostrum and their role in newborn livestock (L2) 14.4.2
  - 3 Examine how factors such as genetics, disease, feed, environment, and body condition affect milk production (L2) 14.4.3
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## **15.0: EXPLORE INHERITANCE AND THE GENETIC BASIS FOR ANIMAL SELECTION** 15.0

### **1 15.1: Identify and Classify Various Types and Conformation of Domestic Animals** 15.1

- 1 Interpret performance data when evaluating livestock (L2) 15.1.1
  - 2 Classify animals and their characteristics based on phenotype (L2) 15.1.2
  - 3 Identify current industry standards for animal selection according to species (L2) 15.1.3
  - 4 Classify body condition scoring system among the different species (L2) 15.1.4
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### **2 15.2: Explore Genetics** 15.2

- 1 Describe the importance of understanding genetics and recognize the impact of Gregor 15.2.1
  - 2 Mendel's development of the basic principles of heredity (L2) 15.2.2
  - 3 Examine the components of DNA and describe its structure (L2) 15.2.3
  - 4 Explain the principles of dominance and incomplete dominance (L2) 15.2.4
  - 5 Explain the results of independent assortment (L2) 15.2.5
  - 6 Predict the genotypes and phenotypes and sex from monohybrid and dihybrid crosses by using the Punnett square (L2) 15.2.6
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**16.0: EXPLORING ANIMAL WELFARE AND ANIMAL PRODUCTION ISSUES IN TODAY'S SOCIETY** 16.0

**1 16.1: Analyze the Philosophies Surrounding Animal Welfare** 16.1

- 1 Compare and contrast animal welfare versus the concept of animal rights (L2) 16.1.1
  - 2 Research the basis for general concerns regarding animal welfare (L2) 16.1.2
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**2 16.2: Discuss Historical Events, Changing Attitudes, and Legislation Regarding Animal Use** 16.2

- 1 Explore the historical events that contributed to the evolution of attitudes regarding animal usage (L2) 16.2.1
  - 2 Examine legislation regarding current animal usage (L2) 16.2.2
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**3 16.3: Explain Controversial Practices and Cultural Differences in Animal Use** 16.3

- 1 Compare and contrast current controversial issues in animal agriculture (L2) 16.3.1
  - 2 Distinguish between fact and propaganda when analyzing animal production issues (L2) 16.3.2
  - 3 Compare and contrast cultural differences and their impact on animal use (L2) 16.3.3
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**17.0: EVALUATE ANIMAL HEALTH** 17.0

**1 17.1: Explore Animal Disease Transmission and Immunity** 17.1

- 1 Describe the modes of transmission of infectious diseases (L2) 17.1.1
  - 2 Identify how passive and active immunity can be enhanced by management (L2) 17.1.2
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**2 17.2: Classify Animal Medications** 17.2

- 1 Distinguish between the two classifications of drugs (biologics and pharmaceuticals) (L2) 17.2.1
  - 2 Compare appropriate storage methods for medications and recognize how improper storage conditions may affect drugs (L2) 17.2.2
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**3 17.3: Administer Medication and Care** 17.3

- 1 Illustrate methods (topically, orally, and injected) used to administer vaccines and pharmaceuticals, including types of injections and determination of appropriate injection site(s) (L2) 17.3.1
- 2 Identify the instruments (multi-dose hypodermic syringe, hypodermic syringe and needle, drench gun, balling gun) used to administer vaccines and pharmaceuticals (L2) 17.3.2
- 3 Examine the components of a label found on animal medication and interpret a veterinarian's prescription (L2) 17.3.3

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#### **4 17.4: Interpret Impact of Parasites on Animal Health** 17.4

- 1 Identify common internal and external parasites that affect livestock and describe the diseases that they may spread or cause (L2) 17.4.1
- 2 Diagram and describe the complete life cycle of common parasites that affect animals (L2) 17.4.2
- 3 Recognize the importance of controlling parasites in disease management (L2) 17.4.3

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#### **5 17.5: Investigate Disease Control and Management Practices** 17.5

- 1 Explain how cleanliness affects disease control and compare antiseptics and disinfectants (L2) 17.5.1
- 2 Evaluate vaccination and prevention methods and describe the types of vaccines available (L2) 17.5.2
- 3 Investigate disease control methods and their appropriate applications (e.g., antibiotics, vaccines, anthelmintic) (L2) 17.5.3
- 4 Evaluate vaccination and prevention methods and describe the types of vaccines available (L2) 17.5.4
- 5 Investigate disease control methods and their appropriate applications (e.g., antibiotics, vaccines, anthelmintic) (L2) 17.5.5

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### **18.0: EXPLORE THE LIVESTOCK INDUSTRY** 18.0

#### **1 18.1: Explore the Beef Industry** 18.1

- 1 Recognize the advantages and disadvantages of beef production operations (L2) 18.1.1
- 2 Determine the facility and equipment needs in beef production operations (L2) 18.1.2
- 3 Compare and contrast the types of beef-production systems and their challenges (L2) 18.1.3
- 4 Analyze the components and challenges of a cow-calf, backgrounding, and finishing operations and examine the factors that affect their profitability (L2) 18.1.4
- 5 Outline the major steps involved in processing edible and inedible products and byproducts (L2) 18.1.5
- 6 Discuss beneficial record-keeping programs (L2) 18.1.6
- 7 Describe identification practices (L2) 18.1.7

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## **2 18.2: Explore the Dairy Cattle Industry** 18.2

- 1 Identify the leading states in dairy production operations (L2) 18.2.1
- 2 Recognize the advantages and disadvantages of dairy production operations (L2) 18.2.2
- 3 Determine the facility and equipment needs in dairy production operations (L2) 18.2.3
- 4 Compare and contrast the types of dairy-production systems and their challenges and analyze the components and challenges of each (L2) 18.2.4
- 5 Outline the major steps involved in processing edible and inedible products and byproducts (L2) 18.2.5
- 6 Discuss beneficial record-keeping programs (L2) 18.2.6
- 7 Describe identification practices (L2) 18.2.7

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## **3 18.3: Explore the Swine Industry** 18.3

- 1 Recognize the advantages and disadvantages of swine production operations (L2) 18.3.1
- 2 Determine the facility and equipment needs in swine production operations (L2) 18.3.2
- 3 Compare and contrast the types of swine-production systems and their challenges and analyze the components and challenges of each (L2) 18.3.3
- 4 Outline the major steps involved in processing edible and inedible products and byproducts (L2) 18.3.4
- 5 Discuss beneficial record-keeping programs (L2) 18.3.5
- 6 Describe identification practices (L2) 18.3.6

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## **4 18.4: Explore the Sheep and Goat Industry** 18.4

- 1 Recognize the advantages and disadvantages of sheep and goat production operations (L2) 18.4.1
- 2 Determine the facility and equipment needs in sheep and goat production operations (L2) 18.4.2
- 3 Compare and contrast the types of sheep and goat systems and their challenges and analyze the components and challenges of each (e.g., fiber, meat, dairy) (L2) 18.4.3
- 4 Outline the major steps involved in processing edible and inedible products and byproducts (L2) 18.4.4
- 5 Discuss beneficial record-keeping programs (L2) 18.4.5
- 6 Describe identification practices (L2) 18.4.6

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## **5 18.5: Explore the Poultry Industry 18.5**

- 1 Recognize the advantages and disadvantages of the different poultry production operations (L2) **18.5.1**
- 2 Determine the facility and equipment needs in poultry production operations (free range, housed) (L2) **18.5.2**
- 3 Analyze the components and challenges of a poultry operations and examine the factors that affect their profitability (e.g., feathers, broiler, layer) (L2) **18.5.3**
- 4 Compare and contrast the types of poultry production systems and their challenges (e.g., chicken, turkey, game birds, exotics) (L2) **18.5.4**
- 5 Analyze the components and challenges of each type of poultry production (e.g., chicken, turkey, game birds, exotics) (L2) **18.5.5**
- 6 Outline the major steps involved in processing edible and inedible products and byproducts (L2) **18.5.6**
- 7 Discuss beneficial record-keeping programs (L2) **18.5.7**

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## **6 18.6: Explore the Equine Industry 18.6**

- 1 Recognize the advantages and disadvantages of equine production operations (L2) **18.6.1**
- 2 Determine the facility and equipment needs in equine production operations (L2) **18.6.2**
- 3 Compare and contrast the types of equine production systems and their challenges and analyze the components and challenges of each (e.g., work, sport, therapy) (L2) **18.6.3**
- 4 Discuss beneficial record-keeping programs (L2) **18.6.4**
- 5 Describe identification practices (i.e., tattoos, branding) (L2) **18.6.5**

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## **19.0: DEVELOP A LOGICAL ARGUMENT FOR EVALUATION AND SELECTION OF ANIMALS 19.0**

### **1 19.1: Evaluate Livestock Using Species, Breed, and Type Characteristics 19.1**

- 1 Evaluate livestock in a systematic, organized manner according to industry standards (L2) **19.1.1**
  - 2 Evaluate livestock using EPD's and RFI's (L2) **19.1.2**
  - 3 Orally defend the selection of breeding replacement animals (L2) **19.1.3**
  - 4 Orally defend the selection of meat animals (L2) **19.1.4**
  - 5 Orally defend the selection of milk producing animals (L2) **19.1.5**
  - 6 Orally defend the selection of equine based on performance and conformation (L2) **19.1.6**
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**20.0: EXPLORE LAND STEWARDSHIP** 20.0

**1 20.1: Understanding Land Stewardship Practices** 20.1

- 1 Compare and contrast range/pasture ecosystems and their monitoring systems (L2) 20.1.1
  - 2 Compare and contrast grazing systems (L2) 20.1.2
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**21.0: EXAMINE MARKETING OF LIVESTOCK PRODUCTS** 21.0

**1 21.1: Evaluate Different Livestock Marketing Techniques** 21.1

- 1 Compare and contrast video marketing versus traditional livestock sales (L2) 21.1.1
  - 2 Compare and contrast tools and techniques for niche markets (L2) 21.1.2
  - 3 Explain how the stock and futures markets affect the livestock industry (L2) 21.1.3
  - 4 Develop a marketing plan for livestock or a livestock product (L2) 21.1.4
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**22.0: EXPLORE CAREER OPPORTUNITIES IN THE ANIMAL SCIENCE INDUSTRY** 22.0

**1 22.1: Understand Employment Fields in the Animal Science Industry** 22.1

- 1 Research career opportunities in livestock production, pleasure and service animals, and animal science (L2) 22.1.1