Texas CTE

# Veterinary Medical Applications (2015)

**General requirements. This course is recommended for students in Grades 11 and 12. Prerequisite: Equine Science, Small Animal Management, or Livestock Production. Students shall be awarded one credit for successful completion of this course.** A

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**Introduction.** B

1 **Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.** B.1

2 **The Agriculture, Food, and Natural Resources Career Cluster focuses on the production, processing, marketing, distribution, financing, and development of agricultural commodities and resources, including food, fiber, wood products, natural resources, horticulture, and other plant and animal products/resources.** B.2

3 **Veterinary Medical Applications covers topics relating to veterinary practices, including practices for large and small animal species. To prepare for careers in the field of animal science, students must attain academic skills and knowledge, acquire technical knowledge and skills related to animal systems and the workplace, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations. To prepare for success, students need opportunities to learn, reinforce, apply, and transfer knowledge and skills and technologies in a variety of settings.** B.3

4 **Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.** B.4

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**tatements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible**

**illustrative examples.** B.5

**Knowledge and skills.** C

1 **The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:** C.1

- A identify career development and entrepreneurship opportunities in the field of veterinary science; C.1
- B demonstrate competencies related to resources, information, interpersonal skills, and systems of operation in veterinary science; C.1
- C demonstrate knowledge of personal and occupational health and safety practices in the workplace; C.1
- D identify employers' expectations, including appropriate work habits, ethical conduct, and legal responsibilities; C.1
- E demonstrate characteristics of good citizenship such as stewardship, advocacy, and community leadership; and C.1
- F research career topics using technology such as the Internet. C.1

2 **The student develops a supervised agriculture experience program. The student is expected to:** C.2

- A plan, propose, conduct, document, and evaluate a supervised agriculture experience program as an experiential learning activity; C.2
- B apply proper record-keeping skills as they relate to the supervised agriculture experience; C.2
- C participate in youth leadership opportunities to create a well-rounded experience program; and C.2
- D produce and participate in a local program of activities using a strategic planning process. C.2

3 **The student researches current topics in veterinary medicine, recognizes the importance of animals in society, and discusses professional ethics and laws that relate to veterinary medicine. The student is expected to:** C.3

- A explain the human-animal bond and how to interact with clients and their animals; C.3
- B identify trends, issues, and historical events that have influenced animal use and care; C.3
- C describe the legal aspects of animal welfare and animal rights; C.3
- D evaluate the principles of veterinary medical ethics; and C.3
- E review policies and procedures in veterinary medicine that reflect various local, state, and federal laws. C.3

4 **The student evaluates veterinary hospital management and marketing to determine their importance to the success of veterinary clinics and hospitals. The student is expected to:** C.4

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A identify skills needed to communicate effectively with clients and pet owners in the community; C.4

B identify vital information and demonstrate effective communication skills necessary to solve problems; C.4

C explain the role and importance of marketing and its effects on the success of a veterinary hospital; and C.4

D develop skills involving the use of electronic technology commonly found in a veterinary hospital such as centrifuge, autoclave, and radiography positions. C.4

5 **The student communicates the importance of medical terminology, evaluates veterinary terms to discover their meanings, and demonstrates the ability to use terms correctly. The student is expected to:** C.5

A analyze veterinary terms to discover their meanings and recognize common Greek and Latin prefixes, suffixes, and roots; C.5

B use directional anatomical terms appropriately; C.5

C identify anatomical structures of animals; C.5

D describe the major body systems using appropriate medical terminology; and C.5

E recognize, pronounce, spell, and define medical terms relating to diagnosis, pathology, and treatment of animals. C.5

6 **The student explores the area of animal management as it relates to animal identification, animal characteristics, and behavioral temperament. The student is expected to:** C.6

A identify a variety of animal species such as companion, exotic, and large animal species according to common breed characteristics; C.6

B recognize common animal behavioral problems within companion, exotic, and large animals per industry standard; C.6

C identify correct handling protocols and discuss their relevance to veterinary medical staff; and C.6

D demonstrate appropriate methods of handling a variety of animal behaviors. C.6

7 **The student investigates the body systems and gains a working knowledge of each system's purpose and functions and how each system is affected by disease. The student is expected to:** C.7

A identify the parts of the skeletal, muscular, respiratory, circulatory, digestive, endocrine, and nervous systems; C.7.A

B describe the functions of the skeletal, muscular, respiratory, circulatory, digestive, endocrine, and nervous systems; C.7.B

C identify appropriate anatomical sites for injections, measuring vital signs, and collecting blood samples for various animal species; and C.7.C

D describe normal animal behavior and vital signs compared to sick animals using medical terminology. C.7.D

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8 **The student performs mathematical calculations used in veterinary medicine. The student is expected to:** C.8

- A add, subtract, multiply, and divide whole numbers, fractions, and decimals as related to veterinary medicine; C.8
- B apply mathematical skills needed for accurate client assessment such as measurement, conversion, and data analysis; C.8
- C solve veterinary problems by calculating percentages and averages; C.8
- D convert between English and metric units; C.8
- E determine weight, volume, and linear measurements using scientific calculations; C.8
- F solve word problems using ratios and dimensional analysis; C.8
- G interpret data using tables, charts, and graphs; and C.8
- H calculate and prepare chemical concentrations using mathematical equations. C.8

9 **The student evaluates animal diseases and identifies internal, external, and protozoal parasites. The student is expected to:** C.9

- A identify factors that influence the health of animals; C.9
- B identify pathogens and describe the effects that diseases have on various body systems; C.9
- C explain courses of treatment for common viral and bacterial diseases; C.9
- D describe the process of immunity and disease transmission; C.9
- E identify internal, external, and protozoal parasites using common and scientific names; C.9
- F describe life cycles of common parasites; C.9
- G explain how parasites are transmitted and their effect on the host; C.9
- H conduct parasitic diagnostic procedures; and C.9
- I describe types of treatments for diseases and parasites. C.9

10 **The student evaluates an animal's health during a clinical examination. The student is expected to:** C.10

- A describe the characteristics and signs of a healthy animal; C.10
- B recognize examples of abnormalities and relate them to their associated problems and illnesses; C.10
- C take temperature, pulse, and respiration for a variety of animals; C.10
- D describe effects of age, stress, and environmental factors on vital signs of animals; C.10
- E explain procedures for physical examinations; and C.10
- F explain the regional approach to assess an animal's health. C.10

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**11** **The student identifies imaging equipment and demonstrates how to safely operate and maintain equipment. The student is expected to:** C.11

- A identify imaging equipment such as an ultrasonograph, endoscope, electrocardiograph, and radiograph; C.11
- B explain safety procedures, maintenance, and operation of imaging equipment; and C.11
- C demonstrate patient restraint and positioning methods used for imaging purposes. C.11

**12** **The student determines nutritional requirements for ruminant and non-ruminant animals and communicates the importance of animal nutrition in maintaining a healthy animal. The student is expected to:** C.12

- A identify the anatomy of the digestive system of ruminant and non-ruminant animals; C.12
- B describe the process of digestion in ruminant and non-ruminant animals; C.12
- C identify types and sources of nutrients and classes of feeds; C.12
- D identify feed additives and describe how additives affect the food supply; C.12
- E evaluate animal dietary needs and feeding factors; C.12
- F calculate energy requirements and formulate rations; C.12
- G discuss feeding practices and feed-quality issues; and C.12
- H analyze the quality of commercially prepared feeds. C.12

**13** **The student examines various aspects of clinical hematology. The student is expected to:** C.13

- A describe laboratory tests and explain the importance of proper laboratory procedures; C.13
- B demonstrate the procedures used in collecting, handling, preparing, and examining fecal, blood, and urine specimens; C.13
- C discuss normal and abnormal results obtained in complete blood counts; C.13
- D explain sensitivity testing and how to read testing results; and C.13
- E prepare microscope slides, preserve specimens, and perform several of the most common laboratory tests such as fecal flotations, microfilaria smear, and packed cell volume. C.13

**14** **The student identifies hospital procedures, skills, and objectives that are included in the job description of an animal care assistant. The student is expected to:** C.14

- A explain the care, maintenance, and use of equipment and instruments found in veterinary practice; C.14
- B explain appropriate hospital procedures; C.14

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C discuss emergency protocols and describe first aid procedures, including cardiopulmonary resuscitation, control of bleeding, and treatment for shock, for small and large animals; C.14

D demonstrate animal care skills such as administering medications, nail trimming, bathing, grooming, ear cleaning, expressing anal sacs, dental prophylaxis, enema administration, and identification of animals; C.14

E demonstrate therapeutic care such as patient observation, maintaining and administering fluids, applying bandages, caring for open wounds, and managing hydrotherapy and physical therapy; and C.14

F describe skills involved in the reproductive and genetic evaluation of animals. C.14

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**15 The student identifies and discusses surgical-assisting procedures, skills, and objectives that are included in the job description of an animal care assistant. The student is expected to:** C.15

A explain the protocol for pre-surgical and post-surgical care of a patient; C.15

B describe methods used in the sterilization and preparation of small and large animal surgery packs; C.15

C review skills involved in patient and surgical room preparation; C.15

D describe surgical procedures such as castration, dehorning, and docking; C.15

E describe care of newborn, orphan, and recumbent patients; and C.15

F identify and monitor equipment used in surgical procedures. C.15

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**16 The student identifies pharmacology-assisting procedures, skills, and objectives that are included in the job description of an animal care assistant. The student is expected to:** C.16

A identify medications according to their classification, form, routes, and methods of administration; C.16

B explain handling and distribution, protocol, and laws for controlled substances, including the U.S. Drug Enforcement Agency; C.16

C calculate dosage using factors such as concentration of drug, weight of animal, and required dosage; C.16

D complete a prescription label with identifiers that are required by the U.S. Food and Drug Administration; and C.16

E select equipment and instruments used to give medications. C.16