# Scope & Sequence

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| Course Name: Veterinary Medical Applications **TSDS PEIMS Code:** 13000600 | **Course Credit:** 1.0**Course Requirements:**. Grades 11 and 12.**Prerequisites:** Equine Science, Small Animal Management, or Livestock Production. |
| **Course Description:** Veterinary Medical Applications covers topics relating to veterinary practices, including practices for large and small animal species.  |
| **NOTE:** This is a suggested scope and sequence for the course content. This content will work with any textbook or instructional materials. If locally adapted, make sure all TEKS are covered. |
| **Total Number of Periods****Total Number of Minutes****Total Number of Hours** | 175 periods7,875 minutes131.25 hours\* | \*Schedule calculations based on 175/180 calendar days. Scope and sequence allows additional time for guest speakers, student presentations, field trips, remediation, extended learning activities, etc.  |
| **Unit Number, Title, and Brief Description** | **# of Class Periods\***(assumes 45-minute periods)Total minutes per unite | **TEKS Covered****130.9 Knowledge and skills** |
| **Unit 1: Career Exploration in the Agricultural/Veterinary Industry**Students will learn about careers in various areas in the veterinary science industry, the personal skills needed to obtain one of these jobs and how skills needed for success have changed over time. Students will understand the importance of time management, the importance of effective communication and appropriate interaction in the workplace as well as understand the importance of a first impression. This unit may culminate in an experiential activity designed to allow the students to create a resume and cover letter with a job description and to participate in a mock job interview with a panel of possible employees.  | 5 periods 225 minutes | (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:(A) identify career development and entrepreneurship opportunities in the field of veterinary science;(B) demonstrate competencies related to resources, information, interpersonal skills, and systems of operation in veterinary science;(C) demonstrate knowledge of personal and occupational health and safety practices in the workplace;(D) identify employers' expectations, including appropriate work habits, ethical conduct, and legal responsibilities;(E) demonstrate characteristics of good citizenship such as stewardship, advocacy, and community leadership; and(F) research career topics using technology such as the Internet. |
| **Unit 2: Supervised Agricultural Experience (SAE)** This unit, students will be able to define and describe Supervised Agricultural Experience (SAE) programs. Students will be able to explain how SAE’s are a vital part of the Agriculture Education Program by participating in local CTSO activities such as FFA as well as engage in a required SAE project. Students will be able to identify key partners in developing a successful SAE. Through involvement in an SAE, students will learn expected workplace behavior, develop specific skills within the industry, and will be given the opportunity to apply academic and occupational skills in the workplace. At the end of this unit, the students should develop an appropriate SAE. | 5 periods225 minutes | (2) The student develops a supervised agriculture experience program. The student is expected to:(A) plan, propose, conduct, document, and evaluate a supervised agriculture experience program as an experiential learning activity;(B) apply proper record-keeping skills as they relate to the supervised agriculture experience;(C) participate in youth leadership opportunities to create a well-rounded experience program; and (D) produce and participate in a local program of activities using a strategic planning process. |
| **Unit 3: Ethics**In this unit, students will gain a better understanding of the relationships between humans and animals. Students will learn about professional ethics and laws which relate to veterinary medicine. Students will also learn to understand the importance of veterinarian responsibility and the trends and issues that have affected the profession.  | 10 periods 450 minutes | (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:(A) explain the human-animal bond and how to interact with clients and their animals;(B) identify trends, issues, and historical events that have influenced animal use and care;(C) describe the legal aspects of animal welfare and animal rights;(D) evaluate the principles of veterinary medical ethics; and(E) review policies and procedures in veterinary medicine that reflect various local, state, and federal laws. |
| **Unit 4: Office Management and Marketing**Office management is an important part of veterinary medicine. This unit, students will learn about veterinary hospital management as well as marketing and skills needed to communicate effectively with both clients and co-workers. Proper scheduling of appointments, boarding and inventory control is crucial to running a successful business. Effective communication with clients and co-workers produces a friendly working environment and makes clients feel confident of the veterinarian’s ability to care for their pets. Students will gain practice in handling a variety of customer situations by participating in role-play scenarios.  | 10 periods450 minutes | (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:(A) identify skills needed to communicate effectively with clients and pet owners in the community;(B) identify vital information and demonstrate effective communication skills necessary to solve problems;(C) explain the role and importance of marketing and its effects on the success of a veterinary hospital; and(D) develop skills involving the use of electronic technology commonly found in a veterinary hospital such as centrifuge, autoclave, and radiography positions. |
| **Unit 5: Medical Terminology** Students will learn many common Greek and Latin prefixes, suffixes, and roots that compose the language of veterinary medicine and learn how to dissect veterinary terms to discover their meanings. Students will also understand the importance of being able use and demonstrate the terminology appropriately. As a culminating activity, have the students come up with a clever and creative way to remember the anatomical terms of location. They can create a rap, rhyme, acronym, etc. The students will present their ideas in front of the class. | 15 periods675 minutes | (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:(A) analyze veterinary terms to discover their meanings and recognize common Greek and Latin prefixes, suffixes, and roots;(B) use directional anatomical terms appropriately;(C) identify anatomical structures of animals;(D) describe the major body systems using appropriate medical terminology; and(E) recognize, pronounce, spell, and define medical terms relating to diagnosis, pathology, and treatment of animals. |
| **Unit 6: Animal Breeds and Behavior** This unit covers basic breed identification, behavior and communication and basic training theories. Animal ownership is a big responsibility involving many aspects of husbandry as well as a basic understanding of animal behavior and communication. There are many different breeds of animals, each with its own unique characteristic and uses. It is important for the students to gain a basic understanding of animal behavior, as it is important for anyone who works closely with animals. At the end of this unit, the students should be able to identify the most common breeds for several species of animals, be able to explain the purpose for which the breed was developed and discuss specific temperament/behavior characteristics of the breed. | 15 periods675 minutes | (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:(A) identify a variety of animal species such as companion, exotic, and large animal species according to common breed characteristics;(B) recognize common animal behavioral problems within companion, exotic, and large animals per industry standard;(C) identify correct handling protocols and discuss their relevance to veterinary medical staff; and(D) demonstrate appropriate methods of handling a variety of animal behaviors. |
| **Unit 7: Anatomy and Physiology**Anatomy and physiology are the foundations on which veterinary medicine is built. In this unit, students will learn about the complex system of an animal’s body and how it is designed to work in unison with all the other body systems. A basic understanding of veterinary anatomy and physiology is essential for any student that may want to become a veterinary assistant. Students will also learn anatomical terminology and learn about dissection of animals to gain a better understanding of the different systems of the animal’s body. At the end of this unit, students will practice using directional terminology by dissecting a three dimensional object.  | 20 periods900 minutes | (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:(A) identify the parts of the skeletal, muscular, respiratory, circulatory, digestive, endocrine, and nervous systems;(B) describe the functions of the skeletal, muscular, respiratory, circulatory, digestive, endocrine, and nervous systems;(C) identify appropriate anatomical sites for injections, measuring vital signs, and collecting blood samples for various animal species; and(D) describe normal animal behavior and vital signs compared to sick animals using medical terminology. |
| **Unit 8: Posology and Pharmacology**This unit prepares the student with fundamental math skills required for all areas of animal science. Posology is used mainly to determine drug dosages and concentrations. Students will practice basic math skills including: addition, subtraction, multiplication and division of whole numbers, fractions and decimals. They will work with percentages and averages, as well as liquid and linear measurement. Additionally, students will be able to convert English and metric units. Students will solve word problems illustrating real-life situations using ratios and dimensional analysis. Students will apply their knowledge of basic math to each problem. Students will gain an understanding of medications, classification and methods of administration. Students will understand that dispensing medication requires knowledge of math and the laws that govern how a medication is packaged and labeled. As a culminating activity, the students will complete activities to calculate medication amounts, dispense and label medications, and correctly fill and read a syringe.  | 15 periods675 minutes | (8) The student performs mathematical calculations used in veterinary medicine. The student is expected to:(A) add, subtract, multiply, and divide whole numbers, fractions, and decimals as related to veterinary medicine;(B) apply mathematical skills needed for accurate client assessment such as measurement, conversion, and data analysis;(C) solve veterinary problems by calculating percentages and averages;(D) convert between English and metric units;(E) determine weight, volume, and linear measurements using scientific calculations;(F) solve word problems using ratios and dimensional analysis;(G) interpret data using tables, charts, and graphs; and(H) calculate and prepare chemical concentrations using mathematical equations.(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:(A) identify medications according to their classification, form, routes, and methods of administration;(B) explain handling and distribution, protocol, and laws for controlled substances, including the U.S. Drug Enforcement Agency;(C) calculate dosage using factors such as concentration of drug, weight of animal, and required dosage;(D) complete a prescription label with identifiers that are required by the U.S. Food and Drug Administration; and(E) select equipment and instruments used to give medications. |
| **Unit 9: Animal Diseases**This unit will cover the most common types of parasites both internal and external as well as the other animal diseases and the methods used to diagnose the parasites and diseases. Students will gain a better understanding that the life cycle and clinical signs of a parasite are critical factors used to determine the correct course of treatment. Additionally, there are many methods used to diagnose parasite infestations. The method used varies depending on the type of parasite being diagnosed. At the end of this unit, students will perform common laboratory procedures for diagnosing parasites. Additionally, students will do a report discussing heartworms in depth.  | 20 periods900 minutes | (9) The student evaluates animal diseases and identifies internal, external, and protozoal parasites. The student is expected to:(A) identify factors that influence the health of animals;(B) identify pathogens and describe the effects that diseases have on various body systems;(C) explain courses of treatment for common viral and bacterial diseases;(D) describe the process of immunity and disease transmission;(E) identify internal, external, and protozoal parasites using common and scientific names;(F) describe life cycles of common parasites;(G) explain how parasites are transmitted and their effect on the host;(H) conduct parasitic diagnostic procedures; and(I) describe types of treatments for diseases and parasites. |
| **Unit 10: Clinical Examination**Students will gain practical knowledge of the methods used to assess an animal’s health. The students will understand the various regions of an animal’s body and the signs of illness that may be present in those areas. They will understand that certain signs and symptoms may indicate a variety of diseases and/or health problems. Students will also learn that temperature, pulse and respiration (TPR) is a useful baseline for predicting overall animal health. They will understand that the TPR varies for every species of animal and may not only vary due to illness or disease, but also due to stress, age and other environmental factors. Students will participate in a role playing activity that will enable them to practice communication skills and learn to properly chart the medical history of an animal. | 15 periods675 minutes | (10) The student evaluates an animal's health during a clinical examination. The student is expected to:(A) describe the characteristics and signs of a healthy animal;(B) recognize examples of abnormalities and relate them to their associated problems and illnesses;(C) take temperature, pulse, and respiration for a variety of animals;(D) describe effects of age, stress, and environmental factors on vital signs of animals;(E) explain procedures for physical examinations; and(F) explain the regional approach to assess an animal's health |
| **Unit 11: Nutrition**This unit covers the various types of digestive systems, the digestive process and major nutrients. Students will gain an understanding of the importance of animal nutrition in maintaining a healthy animal. They will understand the role of nutrition by assessing animal, dietary and feeding factors. Students will also gain an understanding of the importance of a guaranteed analysis and recognize its components on a food label. At the end of this unit, students will be able to know and explain the six basic nutrients and their function in maintaining healthy animals.  | 15 periods675 minutes | (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:(A) identify the anatomy of the digestive system of ruminant and non-ruminant animals;(B) describe the process of digestion in ruminant and non-ruminant animals;(C) identify types and sources of nutrients and classes of feeds;(D) identify feed additives and describe how additives affect the food supply;(E) evaluate animal dietary needs and feeding factors;(F) calculate energy requirements and formulate rations;(G) discuss feeding practices and feed-quality issues; and(H) analyze the quality of commercially prepared feeds. |
| **Unit 12: Laboratory Testing and Equipment**This unit introduces some of the most common laboratory procedures used in the veterinary field. Students will identify and demonstrate how to properly use imaging equipment. They will also explore various aspects of clinical hematology and gain practical experience by performing several of the most common laboratory tests. Additionally, students will investigate the urinary system and perform several urinalyses and chart the results.  | 15 periods675 minutes | (11) The student identifies imaging equipment and demonstrates how to safely operate and maintain equipment. The student is expected to:(A) identify imaging equipment such as an ultrasonograph, endoscope, electrocardiograph, and radiograph;(B) explain safety procedures, maintenance, and operation of imaging equipment; and(C) demonstrate patient restraint and positioning methods used for imaging purposes.(13) The student examines various aspects of clinical hematology. The student is expected to:(A) describe laboratory tests and explain the importance of proper laboratory procedures;(B) demonstrate the procedures used in collecting, handling, preparing, and examining fecal, blood, and urine specimens;(C) discuss normal and abnormal results obtained in complete blood counts;(D) explain sensitivity testing and how to read testing results; and(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. |
|  **Unit 13:** **Hospital and Surgical Procedures**This unit will expose students to several common hospital procedures used in the veterinary field. Students will be able to explain emergency protocol procedures and describe first aid procedures. Additionally, students will be able to demonstrate basic animal care skills such as administering medication and grooming techniques. Students will also understand the importance of a sterile environment in the laboratory and will be able to discuss surgical assisting procedures. As a culminating activity, students will work in groups to demonstrate how to properly bandage leg and abdominal wounds. If an animal is not present for the activity, students may bandage each other’s legs.  | 15 periods675 minutes | (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:(A) explain the care, maintenance, and use of equipment and instruments found in veterinary practice;(B) explain appropriate hospital procedures; (C) discuss emergency protocols and describe first aid procedures, including cardiopulmonary resuscitation, control of bleeding, and treatment for shock, for small and large animals;(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;(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(F) describe skills involved in the reproductive and genetic evaluation of animals.(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:(A) explain the protocol for pre-surgical and post-surgical care of a patient;(B) describe methods used in the sterilization and preparation of small and large animal surgery packs;(C) review skills involved in patient and surgical room preparation;(D) describe surgical procedures such as castration, dehorning, and docking;(E) describe care of newborn, orphan, and recumbent patients; and(F) identify and monitor equipment used in surgical procedures |