

PROGRAM CONCENTRATION:
CAREER PATHWAY:
COURSE TITLE:

Agriculture
Veterinary Science
Veterinary Science

Course Description: The agricultural education course in veterinary science covers the basics of animal care. Topics covered include disease, parasites, feeding, shelter, grooming, and general animal care. The target population is career preparatory students desiring to continue their education after high school or to enter the workforce after graduation from high school. College preparatory students benefit from the course as an elective if they plan to enter college and pursue a degree to enter the veterinary profession. This course allows students entering the workforce after graduation from high school to develop entry-level skills to become employed and to continue their education on the job.

AG-VT-1. Students will gain an understanding of the types of hazards common in the veterinary hospital and the organization that regulates safety standards in the workplace.

- a. Read an MSDS and locate important safety information.
- b. Conduct mathematical equations to determine chemical concentrations.

Academic Standards:

SCSh 2 The student uses standard safety practices for all classroom laboratory and field investigations.

SEV4 The student understands and describe availability, allocation and conservation of energy and other resources.

SEV5 The student recognizes that human beings are part of the global ecosystem and evaluates the effects of human activities and technology on ecosystems.

AG-VT-2. Students will learn how to protect themselves from potential hazards in the workplace. They will be able to describe the correct methods of protection given scenarios describing hazardous situations. They will also research zoonotic diseases using the internet.

- a. Determine the appropriate safety precautions for a given scenario.
- b. Explain what OSHA is and know its purpose.

Academic Standards:

SCSh 2 The student uses standard safety practices for all classroom laboratory.

SEV4 The student understands and describe availability, allocation and conservation of energy and other resources.

SEV5 The student recognizes that human beings are part of the global ecosystem and will evaluate the effects of human activities and technology on ecosystems.

AG-VT-3. Students will investigate the differences between sanitation, disinfection, and sterilization and be able to relate which cleaning method should be used in any given situation.

- a. Describe the different methods of sanitation and know when to use them.
- b. Give examples of the four types of safety hazards.

Academic Standards:

SCSh2 The student investigates the flow of energy and cycling of matter within an ecosystem and relates these phenomena to human society.

SEV3 The student describes stability and change in ecosystems.

SEV4 The student understands and describe availability, allocation and conservation of energy and other resources.

SEV5 The student recognizes that human beings are part of the global ecosystem and evaluates the effects of human activities and technology on ecosystems.

AG-VT-4. 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.

- a. Analyze veterinary terms to define their meanings.
- b. Recognize common Greek and Latin prefixes, suffixes, and roots.
- c. List abbreviations commonly used in veterinary medicine.

Academic Standards:

ELA9RL5, ELA10RL5 The student understands and acquires new vocabulary and uses it correctly in reading and writing.

SAP1 The student analyzes anatomical structures in relationship to their physiological functions.

AG-VT-5. Students will investigate the body systems and gain a working knowledge of how each system functions, its purpose, and how it is affected by disease. Students will apply their knowledge by reading and analyzing several professional journal articles.

- a. Recognize and implement common anatomical terminology.
- b. Apply knowledge of veterinary anatomy through the dissection of animal specimens.
- c. Point out common intramuscular injection sites.

- d. Demonstrate common sites for measuring pulses and collecting blood samples.
- e. Apply terms used in describing breathing to analysis of case studies.
- f. Describe the functions of the skeletal, muscular, circulatory, respiratory, and nervous systems.

Academic Standards:

ELA9RL5, ELA10RL5 The student understands and acquires new vocabulary and uses it correctly in reading and writing.

AG-VT-6. Students will develop a vocabulary of directional anatomical terms and will be able to identify anatomical structures of animals. Students will apply their knowledge by dissection and assembling anatomical models.

- a. Identify the bones of the skeleton and relate them to a live animal.
- b. Identify ten muscles and relate them to a live animal.
- c. Identify structures of the heart as well as major veins and arteries.
- d. Identify parts of the upper and lower respiratory tract.
- e. Identify parts of nerve cells and the brain.
- f. Describe how the body seeks to maintain a state of homeostasis.

Academic Standards:

ELA9RL5, ELA10RL5 The student understands and acquires new vocabulary and uses it correctly in reading and writing.

AG-VT-7. Students will gain practical knowledge of the methods used to assess an animal's health. They will gain experience using the stethoscope and oto/ophthalmoscope to determine normal and abnormal signs of health. Students will participate in a group lab formulating and executing a procedure using the regional approach to assess an animal's health.

- a. List temperature, pulse, and respiration rates for feline, canine, equine, and bovine.
- b. Evaluate an animal's general health by completing a physical exam on the animal.

Academic Standards:

SCSh6 The student communicates scientific investigations and information clearly.

AG-VT-8. Students will gain an understanding of 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 other health problems. A role-playing activity will enable students to practice communication skills and learn to properly chart the medical history of an animal.

- a. Operate the stethoscope, otoscope, and ophthalmoscope correctly.

- b. Communicate with others to obtain a history of an animal as part of a routine physical exam.

Academic Standards:

SCSh4 The student uses tools and instruments for observing, measuring, and manipulating scientific equipment and materials.

AG-VT-9. Students will understand that temperature, pulse, and respiration (TPR) is a useful baseline for predicting overall animal health. They will understand that TPR varies for every species of animal and may vary not only due to illness or disease, but also due to age, stress, and other environmental factors. Students will participate in a group lab following standard veterinary procedures to assess TPR.

- a. Describe the characteristics of a healthy animal and the signs and methods used to assess an unhealthy animal.
- b. Provide examples of abnormalities in general animal health and relate them to the problems and illnesses they may indicate.
- c. Explain why a routine should be devised for all physical exams.

Academic Standards:

SCSh6 The student communicates scientific investigations and information clearly.

AG-VT-10. Students will gain an understanding of the spay/neuter process and its benefits to pets and pet owners. They will research and debate the arguments for and against spaying/neutering and form a conclusion about the topic.

- a. Discuss the arguments for and against spaying and neutering.
- b. Describe the process of immunity.
- c. List ways in which diseases are transmitted.

Academic Standards:

SCSh6. The student communicates scientific investigations and information clearly.

AG-VT-11. Students will gain experience in performing several common hospital procedures and be able to demonstrate the procedures to others. They will complete vaccination schedules, read and fill syringes, bandage, and brush teeth.

- a. Fill and read a syringe.
- b. Apply different types of bandages to various areas of the body.

Academic Standards:

MM1P1. The student solves problems (using appropriate technology).

SCSh6. The student communicates scientific investigations and information clearly.

AG-VT-12: Students will understand the common methods of administering medications. They will complete activities to calculate medication amounts, dispense and label medications, and correctly fill and read a syringe.

- a. Calculate medication amounts
- b. Label medications properly.

Academic Standards:

MM1P1 The student solves problems (using appropriate technology).

SCSh6 The student communicates scientific investigations and information clearly.

AG-VT-13. Students will gain experience in the procedures commonly used to diagnose internal parasites. They will perform several of the most common tests and analyze the results.

- a. Set up and use a microscope properly to scan for parasite eggs.
- b. Perform common laboratory procedures for diagnosing parasites.

Academic Standards:

MM1P1 The student solves problems (using appropriate technology).

SCSh6 The student communicates scientific investigations and information clearly.

AG-VT-14. Students will investigate common internal and external parasites of cats and dogs and be able to identify and name them using both common and scientific names. They will understand that the mode of transmission, life cycle, and effect on the host are all factors used to determine the best course of treatment.

- a. Describe the general clinical signs of an animal with a parasite infestation.
- b. Diagram the life cycles of internal and external parasites.

Academic Standards:

ELA9RL5, ELA10RL5 The student understands and acquires new vocabulary and uses it correctly in reading and writing.

SCSh6 The student communicates scientific investigations and information clearly.

AG-VT-15. Students will gain experience operating a microscope to search for parasite eggs and gain the ability to identify parasites as well as other debris found in a fecal specimen.

- a. Discuss heartworms in depth.
- b. Identify adult parasites and parasite eggs using a microscope.

Academic Standards:

ELA9RL5, ELA10RL5 The student understands and acquires new vocabulary and uses it correctly in reading and writing.

SCSh6 The student communicates scientific investigations and information clearly.

AG-VT-16. Students will be able to name the different types of records, explain their purpose, and describe the types of information contained in each record. They will gain experience filling out various types of medical records and scheduling office appointments.

- a. Complete an animal identification record.
- b. Schedule appointments.
- c. Answer phones properly.
- d. Outline the five steps of the grieving process.

Academic Standards:

SCSh6 The student communicates scientific investigations and information clearly.

AG-VT-17. Students will explain the importance of good phone skills and effective communication when dealing with clients. They will engage in role-play that mimics situations that occur in a veterinary office including difficult clients, euthanasia, and co-worker conflicts.

- a. Explain the difference between verbal and non-verbal communication.
- b. Describe how inventory works and why it is important to maintain an efficient inventory control program.
- c. Identify office calls that may be emergencies.

Academic Standards:

ELA10C1 The student demonstrates understanding and control of the rules of the English language, realizing that usage involves the appropriate application of conventions and grammar in both written and spoken formats.

AG-VT-18. Students will practice basic math skills including addition, subtraction, multiplication, and division of whole numbers, fractions, and decimals. They will work with percents and averages, as well as liquid and linear measurement. Students will be able to convert English and metric units.

- a. Complete basic addition, subtraction, multiplication, and division problems correctly using whole numbers, fractions, and decimals.
- b. Evaluate a given word problem to identify the important information that will be used in solving the problem.
- c. Operate a calculator correctly.

Academic Standards:

MM1P1 The student solves problems (using appropriate technology).

SCSh6 The student communicates scientific investigations and information clearly.

AG-VT-19. 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.

- a. Complete advanced ratios dealing with dosage, dilution, and weight conversions correctly.
- b. Complete word problems dealing with percent, temperature conversion, and liquid and linear measurement correctly.
- c. Explain why solid math skills are vital to the success of any veterinary hospital.

Academic Standards:

MM1P1 The student solves problems (using appropriate technology).

SCSh6 The student communicates scientific investigations and information clearly.

AG-VT-20. Students will gain an understanding of the circulatory system including its functions, major organs, and how it operates. They will view models, microscope slides, and dissect preserved specimens. Students will be able to identify the various cells that form blood and describe their functions.

- a. Prepare and stain a blood film correctly.
- b. Use a microscope to correctly identify the different types of blood cells.

Academic Standards:

ELA9RL5, ELA10RL5 The student understands and acquires new vocabulary and uses it correctly in reading and writing.

SCSh6 The student communicates scientific investigations and information clearly.

AG-VT-21. Students will explore various aspects of clinical hematology. They will gain practical experience performing several of the most common laboratory tests.

- a. Prepare an antibiotic sensitivity test and read the results.
- b. Describe the path of blood through the heart.

Academic Standards:

ELA9RL5, ELA10RL5 The student understands and acquires new vocabulary and uses it correctly in reading and writing.

SCSh6 The student communicates scientific investigations and information clearly.

AG-VT-22. Students will investigate the urinary system, including its functions, major organs, and how it operates. They will view models, microscope slides, and preserved specimens. They will perform several urinalyses and chart the results.

- a. Explain why it is vital that all laboratory tests are properly performed.
- b. Describe the functions of the circulatory and urinary systems.

Academic Standards:

ELA9RL5, ELA10RL5 The student understands and acquires new vocabulary and uses it correctly in reading and writing.

SCSh6 The student communicates scientific investigations and information clearly.

AG-VT-23. Students will gain practical experience performing two types of antibiotic sensitivity tests and will chart the results. Students will be able to identify the different types and forms of bacteria.

- a. Perform a urinalysis correctly.
- b. Describe abnormalities commonly seen in blood films.

Academic Standards:

ELA9RL5, ELA10RL5 The student understands and acquires new vocabulary and uses it correctly in reading and writing.

SCSh6 The student communicates scientific investigations and information clearly.

AG-VT-24. Students will gain an understanding of the importance of animal nutrition in maintaining a healthy animal. They will understand the functions of nutrients in an animal's diet, the types of digestive systems commonly found in animals, and the process of digestion. Students will participate in a food nutrients lab to identify what nutrients can be found in various animal feeds and conduct a palatability study to gain an understanding of feed selection.

- a. Conduct a food nutrients lab to identify the presence or absence of nutrients in various animal feeds.
- b. Evaluate various food labels to determine the nutrient components and their quality.
- c. Evaluate various food labels and advertisements to determine marketing strategies.
- d. Conduct a palatability study to identify animal preferences in foods.

Academic Standards:

SB1 (c) The student identifies the function of the four major macromolecules (i.e., carbohydrates, proteins, lipids, nucleic acids).

AG-VT-25. Students will understand the role of nutrition by assessing animal, dietary, and feeding factors. They will be able to calculate maintenance energy requirements for cats and dogs and a dry matter analysis for a given feed. In addition, students will understand the importance of a guaranteed analysis and recognize its components on a pet food label.

- a. Calculate dry matter of various feeds.
- b. Calculate the maintenance energy requirements for pets.
- c. Define nutrition and explain its importance in maintaining animal health.
- d. Know and explain the six basic nutrients and their function in maintaining healthy animals.

Academic Standards:

SB1 (c) The student identifies the function of the four major macromolecules (i.e., carbohydrates, proteins, lipids, nucleic acids).

SB3 The student derives the relationship between single-celled and multi-celled organisms and the increasing complexity of systems.

SES6 (a) The student relates the nature and distribution of life on Earth, including humans, to the chemistry and availability of water.

AG-VT-26. Students will be able to identify and describe the various components of an animal feed label and be able to make an educated decision on which food to purchase for any animal. They will also understand the role of marketing in the pet food industry and conduct cost comparisons of various feeds.

- a. Define the terms digestion, absorption, and metabolism and describe the processes.
- b. Discuss the differences between ruminant and nonruminant digestive systems.
- c. Understand and calculate an animal's energy requirements based on its use and stage of life.
- d. Understand the importance of guaranteed analysis in selecting animal feed.

Academic Standards:

SB1 (c) The student identifies the function of the four major macromolecules (i.e., carbohydrates, proteins, lipids, nucleic acids).

SB3 The student derives the relationship between single-celled and multi-celled organisms and the increasing complexity of systems.

SES6 (a) The student relates the nature and distribution of life on Earth, including humans, to the chemistry and availability of water.

AG-VT-27. Students will explain the signs of disease in an animal as compared to a healthy animal and discuss factors that influence the health of an animal as well as factors that cause disease.

- a. List the factors that influence health and wellness.
- b. Discuss the factors that may cause disease.

Academic Standards:

SB3 The student derives the relationship between single-celled and multi-celled organisms and the increasing complexity of systems.

AG-VT-28. Students will understand the path a disease takes and how it affects various body systems. They will also discuss the types of treatments available and how and when those treatments may be used.

- a. Describe the signs of disease.
- b. Explain how different diseases work and affect the body and the methods used to treat those diseases.

Academic Standards:

SB3 The student derives the relationship between single-celled and multi-celled organisms and the increasing complexity of systems.

AG-VT-29. Students will form an educated opinion of their stance on animal rights/welfare. Students will participate in a debate over the animal rights vs. welfare issue.

- a. Discuss the issue of animal rights vs. welfare.

Academic Standards:

ELA10RL4 (d) The student includes a formal works cited or bibliography when applicable.

SCSh1 The student evaluates the importance of curiosity, honesty, openness, and skepticism in science.

AG-VT-30. Students will understand the importance of animals in their lives and the many roles that animals play in society.

- a. Explain the human/animal bond.
- b. List the ways in which animals are a part of their lives.

Academic Standards:

SCSh6 The student communicates scientific investigations and information clearly.

AG-VT-31. Students will gain an understanding of various career opportunities in

the veterinary industry through lectures, research, and projects. An emphasis will be placed on the discovery of the diversity of careers. Students will brainstorm and gather information on a number of different careers.

- a. Develop/evaluate interview skills.
- b. Write a cover letter and résumé for a career in the veterinary industry.

Academic Standards:

ELA10C1 The student demonstrates understanding and control of the rules of the English language, realizing that usage involves the appropriate application of conventions and grammar in both written and spoken formats.

AG-VT-32. Students will understand the process of choosing a career path by analyzing their interests and abilities and choosing three careers that appeal to them.

- a. Understand the variety of career fields in the veterinary industry.
- b. Understand the steps necessary to choose a career.

Academic Standards:

ELA10C1 The student demonstrates understanding and control of the rules of the English language, realizing that usage involves the appropriate application of conventions and grammar in both written and spoken formats.

AG-VT-33. Students will understand the job requirements and benefits of different veterinary careers. Students will research several careers compiling information on each career and then analyzing which career best suits them.

- a. Identify and understand job requirements as well as benefits of jobs in the veterinary industry.

Academic Standards:

ELA10C1 The student demonstrates understanding and control of the rules of the English language, realizing that usage involves the appropriate application of conventions and grammar in both written and spoken formats.

AG-VT-34. Students will learn about and understand the various skills to improve employability. They will interview employers and present a project presentation to the class on the skills and ways to attain and maintain a job. The presentation will include a mock interview and critiques and explanation of methods.

- a. Describe different interview techniques.

Academic Standards:

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ELA10C1 The student demonstrates understanding and control of the rules of the English language, realizing that usage involves the appropriate application of conventions and grammar in both written and spoken formats.

AG-VT-35. Students will 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.

- a. Identify common breeds of animals on sight.
- b. Demonstrate various methods of behavior modification.

Academic Standard:

ELA10RC4 (a) The student explores life experiences related to subject area content.

SB5 The student evaluates the role of natural selection in the development of the theory of evolution.

AG-VT-36. Students will gain knowledge and practical skills in the area of animal behavior by observing animals as they interact with other animals, humans, and their environment.

- a. Discuss the most common types of behaviors displayed by various animal breeds.
- b. Explain the concept of animal husbandry and what it entails.

Academic Standards:

ELA10RC4 (a) The student explores life experiences related to subject area content.

Reading Across the Curriculum

Reading Standard Comment

After the elementary years, students engage in reading for learning. This process sweeps across all disciplinary domains, extending even to the area of personal learning. Students encounter a variety of informational as well as fictional texts, and they experience text in all genres and modes of discourse. In the study of various disciplines of learning (language arts, mathematics, science, social studies), students must learn through reading the communities of discourse of each of those disciplines. Each subject has its own specific vocabulary, and for students to excel in all subjects, they must learn the specific vocabulary of those subject areas in *context*.

Beginning with the middle grades years, students begin to self-select reading materials based on personal interests established through classroom learning. Students become curious about science, mathematics, history, and literature as they form contexts for those subjects related to their personal and classroom experiences. As students

explore academic areas through reading, they develop favorite subjects and become confident in their verbal discourse about those subjects.

Reading across curriculum content develops both academic and personal interests in students. As students read, they develop both content and contextual vocabulary. They also build good habits for reading, researching, and learning. The Reading Across the Curriculum standard focuses on the academic and personal skills students acquire as they read in all areas of learning.

CTAE-RC-1 Students will enhance reading in all curriculum areas by:

Reading in All Curriculum Areas

- Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas.
- Read both informational and fictional texts in a variety of genres and modes of discourse.
- Read technical texts related to various subject areas.

Discussing Books

- Discuss messages and themes from books in all subject areas.
- Respond to a variety of texts in multiple modes of discourse.
- Relate messages and themes from one subject area to messages and themes in another area.
- Evaluate the merit of texts in every subject discipline.
- Examine author's purpose in writing.
- Recognize the features of disciplinary texts.

Building Vocabulary Knowledge

- Demonstrate an understanding of contextual vocabulary in various subjects.
- Use content vocabulary in writing and speaking.
- Explore understanding of new words found in subject area texts.

Establishing Context

- Explore life experiences related to subject area content.
- Discuss in both writing and speaking how certain words are subject area related.
- Determine strategies for finding content and contextual meaning for unknown words.

CTAE Foundation Skills

The Foundation Skills for Career, Technical and Agricultural Education (CTAE) are critical competencies that students pursuing any career pathway should exhibit to be successful. As core standards for all career pathways in all program concentrations, these skills link career, technical and agricultural education to the state's academic performance standards.

The CTAE Foundation Skills are aligned to the foundation of the U. S. Department of Education's 16 Career Clusters. Endorsed by the National Career Technical Education

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Foundation (NCTEF) and the National Association of State Directors of Career Technical Education Consortium (NASDCTEc), the foundation skills were developed from an analysis of all pathways in the sixteen occupational areas. These standards were identified and validated by a national advisory group of employers, secondary and postsecondary educators, labor associations, and other stakeholders. The Knowledge and Skills provide learners a broad foundation for managing lifelong learning and career transitions in a rapidly changing economy.

CTAE-FS-1 Technical Skills: Learners achieve technical content skills necessary to pursue the full range of careers for all pathways in the program concentration.

CTAE-FS-2 Academic Foundations: Learners achieve state academic standards at or above grade level.

CTAE-FS-3 Communications: Learners use various communication skills in expressing and interpreting information.

CTAE-FS-4 Problem Solving and Critical Thinking: Learners define and solve problems, and use problem-solving and improvement methods and tools.

CTAE-FS-5 Information Technology Applications: Learners use multiple information technology devices to access, organize, process, transmit, and communicate information.

CTAE-FS-6 Systems: Learners understand a variety of organizational structures and functions.

CTAE-FS-7 Safety, Health and Environment: Learners employ safety, health and environmental management systems in corporations and comprehend their importance to organizational performance and regulatory compliance.

CTAE-FS-8 Leadership and Teamwork: Learners apply leadership and teamwork skills in collaborating with others to accomplish organizational goals and objectives.

CTAE-FS-9 Ethics and Legal Responsibilities: Learners commit to work ethics, behavior, and legal responsibilities in the workplace.

CTAE-FS-10 Career Development: Learners plan and manage academic-career plans and employment relations.

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CTAE-FS-11 Entrepreneurship: Learners demonstrate understanding of concepts, processes, and behaviors associated with successful entrepreneurial performance.