

Colorado CTE Course – Scope and Sequence

Course Name	Advanced Veterinary Science A		Course Details	Level 4 course in the Animal Science Pathway. Third of four semesters in Vet Science strand.	
			Course = 0.50 Carnegie Unit Credit		
Course Description	Students will focus on advanced animal behavior and handling, positioning and restraint for surgical procedures, pharmacology, Asepsis, hospital and surgical procedures, antibiotics and antibiotic resistance, laboratory testing and procedures as well as veterinary technologies. Current animal agricultural issues will be researched and addressed. The scientific processes of observation, hypothesizing, data gathering, interpretation, analysis and application will be included. Career opportunities and educational preparation will be examined. Learning activities are varied with classroom, laboratory and field experiences will be included.				
Note:	This is a suggested scope and sequence for the course content. The content will work with any textbook or instructional resource. If locally adapted, make sure all essential knowledge and skills are covered.				
SCED Identification #	18105	Schedule calculation based on 60 % of instructional time in the semester. Scope and sequence allows for additional time for guest speakers, student presentations, field trips, remediation, or other content topics.			
All courses taught in an approved CTE program must include Essential Skills embedded into the course content. The Essential Skills Framework for this course can be found at https://www.cde.state.co.us/standardsandinstruction/essentialskills					
Instructional Unit Topic	Suggested Length of Instruction	CTE or Academic Standard Alignment	Competency / Performance Indicator	Outcome / Measurement	CTSO Integration
Unit 1: Health and Disease • Animal Health • Animal Behavior • Diseases • Disorders • Parasites	35%	AS.02. Utilize best-practice protocols based upon animal behaviors for animal husbandry and welfare AS.06. Classify, evaluate and select animals based on anatomical and physiological characteristics.	AS.02.01. Demonstrate management techniques that ensure animal welfare. <u>SCIENCE:</u> <u>NGSS.HS.ETS.1.2</u> AS.06.01. Classify animals according to taxonomic classification systems and use (e.g. agricultural, companion, etc.).	AS.02.01.02.a. Research and summarize the challenges involved in working with animals and resources available to overcome them (e.g., tools, technology, equipment, facilities, animal behavior signals, etc.). AS.06.01.01.c Assess taxonomic characteristics and classify animals according to the taxonomic classification system. AS.06.02.03.a Identify and summarize the properties, locations, functions and types	Veterinary Science CDE

		AS.07. Apply principles of effective animal health care.	AS.06.02. Apply principles of comparative anatomy and physiology to uses within various animal systems. <u>SCIENCE: SC.HS.2.1.</u> <u>SC.HS.2.2</u> AS.07.01. Design programs to prevent animal diseases, parasites and other disorders and ensure animal welfare. <u>MATH:MA.HS.N.Q.A</u>	of animal cells, tissues, organs and body systems. AS.06.02.03.b Compare and contrast animal cells, tissues, organs, body systems types and functions among animal species. AS.07.01.03.a List and summarize the characteristics of wounds, common diseases, parasites and physiological disorders that affect animals. AS.07.01.01.a. Identify and summarize specific tools and technology used in animal health management. AS.07.01.01.b. Describe and demonstrate the proper use and function of specific tools and technology related to animal health management. AS.07.01.01.c. Select and use tools and technology to meet specific animal health management goals. AS.07.01.05.a. Explain the clinical significance of common veterinary methods and treatment (e.g., aseptic techniques, antibiotic use, wound management, etc.) CS.03.04.01.a. Identify and differentiate the appropriate protective equipment for the safe use and operation of	
		CS.03. Examine and summarize the importance of health, safety and			

		environmental management systems in AFNR workplaces.	CS.03.04 Use appropriate protective equipment and demonstrate safe and proper use of AFNR tools and equipment	specific tools and equipment (e.g. PPE, etc.). CS.03.04.02.b. Complete the set up and adjustment for tools and equipment related to AFNR tasks. CS.03.04.03.b. Assess and demonstrate appropriate operation, storage and maintenance techniques for AFNR tools and equipment.CRP.04.02.01.a	
Unit 2: Pharmacology - Mathematical applications in Veterinary Science - Dosage Administration	25%	AS.07. Apply principles of effective animal health care	AS.07.01. Design programs to prevent animal diseases, parasites and other disorders and ensure animal welfare. MATH:MA.HS.N.Q.A	AS.07.01.01.a Identify and summarize specific tools and technology used in animal health management. AS.07.01.01.b Describe and demonstrate the proper use and function of specific tools and technology related to animal health management. AS.07.01.03.c Treat common diseases, parasites and physiological disorders of animals according to directions prescribed by an animal health professional. AS.07.01.05.a Explain the clinical significance of common veterinary methods and treatment (e.g., aseptic techniques, antibiotic use, wound management, etc.).	

Course Name	Advanced Veterinary Science B		Course Details	Level 4 course in the Animal Science pathway. Fourth of four semesters in the Vet Science strand.	
			Course = 0.50 Carnegie Unit Credit		
Course Description	Students will develop knowledge, skills and understanding in the biological processes and physiological systems found in livestock and companion animal species including anatomy and physiology, growth and development, muscular and skeletal systems, integumentary system, respiratory and circulatory systems, nervous system, lymphatic and endocrine systems and excretory system. The scientific processes of observation, hypothesizing, data gathering, interpretation, analysis and application will be included. Career opportunities and educational preparation will be examined. Learning activities are varied with classroom, laboratory and field experiences will be included.				
Note:	This is a suggested scope and sequence for the course content. The content will work with any textbook or instructional resource. If locally adapted, make sure all essential knowledge and skills are covered.				
SCED Identification #	18105	Schedule calculation based on 60 calendar days of a 90-day semester. Scope and sequence allows for additional time for guest speakers, student presentations, field trips, remediation, or other content topics.			
All courses taught in an approved CTE program must include Essential Skills embedded into the course content. The Essential Skills Framework for this course can be found at https://www.cde.state.co.us/standardsandinstruction/essentialskills					
Instructional Unit Topic	Suggested Length of Instruction	CTE or Academic Standard Alignment	Competency / Performance Indicator	Outcome / Measurement	CTSO Integration
Veterinary Medical Practices • Animal Handling & Identification • Vital Signs • Blood Samples • Injections • Clinical Examinations • - Laboratory Procedures • Hospital Procedures • Surgical Procedures	60%	AS.02. Utilize best-practice protocols based upon animal behaviors for animal husbandry and welfare. AS.06. Classify, evaluate and select animals based on anatomical and physiological characteristics. AS.07. Apply principles of effective animal health care.	AS.02.01. Demonstrate management techniques that ensure animal welfare. <i>SCIENCE: NGSS.HS.ETS1.2</i> AS.06.02. Apply principles of comparative anatomy and physiology to uses within various animal systems. <i>SCIENCE: SC.HS.2.1</i>	AS.02.01.02.a .Research and summarize the challenges involved in working with animals and resources available to overcome them (e.g., tools, technology, equipment, facilities, animal behavior signals, etc.). AS.06.02.03.c. Apply knowledge of anatomical and physiological characteristics of animals to make production and management decisions. AS.07.01.01.a Identify and summarize specific tools and technology used in animal health management.	

		CS.03. Examine and summarize the importance of health, safety and environmental management systems in AFNR workplaces	AS.07.01. Design programs to prevent animal diseases, parasites and other disorders and ensure animal welfare. <i>MATH: MA.HS.N.Q.A</i> CS.03.04. Performance Indicator: Use appropriate protective equipment and demonstrate safe and	AS.07.01.01.b Describe and demonstrate the proper use and function of specific tools and technology related to animal health management. AS.07.01.01.c Select and use tools and technology to meet specific animal health management goals. AS.07.01.02.a Explain methods of determining animal health and disorders. AS.07.01.02.b Perform simple health-check evaluations on animals and practice basic emergency response procedures related to animals. AS.07.01.03.a List and summarize the characteristics of wounds, common diseases, parasites and physiological disorders that affect animals. AS. 07.01.05.a Explain the clinical significance of common veterinary methods and treatment (e.g., aseptic techniques, antibiotic use, wound management, etc.). CS.03.04.02.b. Complete the set up and adjustment for tools and equipment related to AFNR tasks. CS.03.04.03.b. Assess and demonstrate appropriate	
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			proper use of AFNR tools and equipment.	operation, storage and maintenance techniques for AFNR tools and equipment.	
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Academic Standards Alignment

Colorado CTE courses are required to integrate academic and essential skills into course content. The following academic standards have been identified as aligned to this course and should be integrated throughout instruction.

[CO CTE Academic Standards Resources](#) (Rubrics, integration strategies, etc)

[CDE Colorado Academic Standards Online](#) (Online standards lookup tool)

Standard 1: Oral Expression and Listening

Prepared Graduate 1: *Collaborate effectively as group members or leaders who listen actively and respectfully; pose thoughtful questions, acknowledge the ideas of others; and contribute ideas to further the group's attainment of an objective.*

Students collaborate to evaluate animal health conditions, develop disease prevention strategies, apply veterinary medical procedures, analyze laboratory findings, and solve animal health challenges through classroom, laboratory, and field experiences.

Prepared Graduate 2: *Deliver effective oral presentations for varied audiences and varied purposes.*

Students communicate veterinary science concepts, explain disease processes, present research on current animal agriculture issues, and discuss laboratory findings and veterinary treatment methods during classroom and CTSO activities.

Standard 2: Reading for All Purposes

Prepared Graduate 4: *Read a wide range of informational texts to build knowledge and to better understand the human experience.*

Students analyze veterinary references, disease information, pharmacology resources, laboratory procedures, scientific literature, anatomical and physiological resources, and current animal agriculture issues to understand advanced veterinary science concepts.

Prepared Graduate 5: *Understand how language functions in different contexts, command a variety of word-learning strategies to assist comprehension, and make effective choices for meaning or style when writing and speaking.*

Students develop and apply specialized vocabulary related to pharmacology, asepsis, animal behavior, anatomy and physiology, laboratory testing, surgical procedures, antibiotic resistance, disease management, and veterinary technologies to communicate effectively in veterinary science settings.

Standard 3: Writing and Composition

Prepared Graduate 6: *Craft arguments using techniques specific to the genre.*

Students evaluate disease prevention methods, treatment protocols, veterinary technologies, laboratory findings, and animal health management practices, defending recommendations using scientific evidence, observational data, and veterinary best practices.

Prepared Graduate 7: *Craft informational/explanatory texts using techniques specific to the genre.*

Students develop laboratory reports, disease summaries, treatment plans, animal health evaluations, and technical explanations describing veterinary procedures, pharmacology, anatomy and physiology, and clinical practices.

Standard 4: Research Inquiry and Design

Prepared Graduate 10: *Gather information from a variety of sources; analyze and evaluate its quality and relevance; and use it ethically to answer complex questions.*

Students research animal diseases, pharmacology, antibiotic resistance, veterinary technologies, anatomy and physiology, laboratory diagnostics, animal behavior, surgical procedures, and current issues in animal agriculture to develop evidence-based solutions for advanced veterinary science challenges.

Note: *Mathematics and Science standards will be added in the future. Visit the [Colorado Academic Standards](#) page for the most current version.*