

Colorado CTE Course – Scope and Sequence

Course Name	Animal Production and Management A		Course Details	Level 3 course in the Animal Science pathway. This is the first semester in the animal production strand.		
			Course = 0.50 Carnegie Unit Credit			
Course Description	Students will develop understanding and proficiency in the areas of Animal Production Systems, “Farm to Table” , Animal Reproduction and Genetics, Animal Nutrition and Feeding, Animal Behavior and Management, the business side of animal production, and research current Issues facing Animal Agriculture.					
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 #	18103	Schedule calculation based on 60 % of instructional time in 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 % of Instructional Time	CTE or Academic Standard Alignment	Competency / Performance Indicator	Outcome / Measurement	CTSO Integration	
Unit 1: Production Systems <ul style="list-style-type: none"> Production systems (i.e. cow/calf, backgrounding, grass fed, feedlot) Marketing methods 	5%	AS.01. Analyze historic and current trends impacting the animal systems industry.	AS.01.02. Assess and select animal production methods for use in animal systems based upon their effectiveness and impacts.	AS.01.02.02.a. Research and examine marketing methods for animal products and services (e.g., conventional, niche markets, locally grown, etc.). AS.01.02.01.a. Identify and categorize terms and methods related to animal production (e.g., sustainable, conventional, humanely raised, natural, organic, etc.). AS.01.02.01.b. Analyze the impact of animal production methods on end product qualities (e.g., price, sustainability, marketing, labeling, animal welfare, etc.).		

<p>Unit 2: Farm To Table-</p> <ul style="list-style-type: none"> Animal supply chain 	<p>15%</p>	<p>CS.02. Evaluate the nature and scope of the Agriculture, Food & Natural Resources Career Cluster and the role of agriculture, food and natural resources (AFNR) in society and the economy.</p>	<p>CS.02.02. Examine the components of the AFNR systems and assess their impact on the local, state, national and global society and economy.</p>	<p>CS.02.02.01.a. Identify and summarize the components within AFNR systems (e.g., Animal Systems: health, nutrition, genetics, etc.; Natural Resources Systems: soil, water, etc.).</p> <p>CS.02.02.01.b. Assess components within AFNR systems and analyze relationships between systems.</p> <p>CS.02.02.02.a. Define and summarize societies on local, state, national and global levels and describe how they relate to AFNR systems.</p> <p>CS.02.02.02.b. Assess how people within societies on local, state, national and global levels interact with AFNR systems on daily, monthly or yearly basis.</p>	
<p>Unit 3: Reproduction and Genetics</p> <ul style="list-style-type: none"> Reproductive anatomy Reproductive hormones Hormone regulation Reproductive technologies Mating systems Artificial Insemination Embryo Transfer 	<p>20%</p>	<p>AS.04. Apply principles of animal reproduction to achieve desired outcomes for performance, development and/or economic production.</p>	<p>AS.04.01. Performance Indicator: Evaluate animals for breeding readiness and soundness.</p> <p>AS.04.02. Performance Indicator: Apply scientific principles to select and care for breeding animals.</p>	<p>AS.04.01.01.a. Identify and categorize the male and female reproductive organs of the major animal species.</p> <p>AS.04.01.01.b. Analyze the functions of major organs in the male and female reproductive systems.</p> <p>AS.04.02.03.b. Evaluate reproductive problems that occur in animals.</p>	

			<p>AS.04.03 Performance Indicator: Apply scientific principles to breed animals.</p>	<p>AS.04.03.01.a. Identify and categorize natural and artificial breeding methods (e.g., natural breeding, artificial insemination, estrous synchronization, flushing, cloning, etc.).</p> <p>AS.04.03.02.a. Analyze the materials, methods and processes of artificial insemination.</p> <p>AS.04.03.02.b. Demonstrate artificial insemination techniques.</p> <p>AS.04.03.03.b. Analyze the processes of major reproductive management practices, including estrous synchronization, superovulation, flushing and embryo transfer.</p> <p>AS.04.03.03.a. Identify and summarize the advantages and disadvantages of major reproductive management practices, including estrous synchronization, superovulation, flushing and embryo transfer (e.g., cost, labor, equipment, etc.).</p> <p>AS.04.03.04.b. Compare and contrast quantitative breeding value differences between genetically superior animals and animals of average genetic value.</p>	
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<p>Unit 4: Nutrition and Feeding</p> <ul style="list-style-type: none"> • Digestive system review • Nutrient values • Daily Nutrient requirements • Feed Rations of common species • Supplements/specialty feeds 	<p>20%</p>	<p>AS.03. CCTC Standard: Design and provide proper animal nutrition to achieve desired outcomes for performance, development, reproduction and/or economic production.</p>		<p>AS.03.01.01.a. Identify and summarize essential nutrients required for animal health and analyze each nutrient's role in growth and performance.</p> <p>AS.03.01.01.b. Differentiate between nutritional needs of animals in different growth stages and production systems (e.g., maintenance, gestation, natural, organic, etc.).</p> <p>AS.03.01.01.c. Assess nutritional needs for an individual animal based on its growth stage and production system.</p> <p>AS.03.01.02.b. Correlate a species' nutritional needs to feedstuffs that could meet those needs.</p> <p>AS.03.02.01.c. Select appropriate feedstuffs for animals based on a variety of factors (e.g., economics, digestive system and nutritional needs, etc.).</p> <p>AS.03.02.02.c. Select and utilize animal feeds based on nutritional requirements, using rations for maximum nutrition and optimal economic production.</p> <p>AS.03.02.03.b. Compare and contrast methods that utilize feed additives and growth</p>	
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				promotants with production practices that do not, (e.g., organic versus conventional production methods).	

Colorado CTE Course – Scope and Sequence

Course Name	Animal Production and Management B		Course Details	Level 3 course in the Animal Science pathway. This is the second` semester in the animal production strand.		
			Course = 0.50 Carnegie Unit Credit			
Course Description	Students will develop understanding and proficiency in the areas of Animal Production Systems, “Farm to Table” , Animal Reproduction and Genetics, Animal Nutrition and Feeding, Animal Behavior and Management, the business side of animal production, and research current Issues facing Animal Agriculture.					
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 #		Schedule calculation based on 60 % of instructional time in semester. Scope and sequence allows for additional time for guest speakers, student presentations, field trips, remediation, or other content topics.				
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Instructional Unit Topic	Suggested % of Instructional Time	CTE or Academic Standard Alignment	Competency / Performance Indicator	Outcome / Measurement	CTSO Integration	
Unit 1: Animal Behavior and Management <ul style="list-style-type: none"> Types of animal behaviors Behavior management and animal handling Animal Handling systems and facilities design and layout Laws applied to animal handling Animal Husbandry 	20%	AS.02. CCTC Standard: Utilize best-practice protocols based upon animal behaviors for animal husbandry and welfare.	AS.02.01. Performance Indicator: Demonstrate management techniques that ensure animal welfare.	AS.02.01.02.b. Analyze and document animal welfare procedures used to ensure safety and maintain low stress when moving and restraining animals. 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.02.01.01.b. Design programs that assure the welfare of animals and prevent abuse or mistreatment. AS.02.02.01.b. Utilize tools, technology and equipment to		

<p>practices, tools and equipment</p>				<p>perform animal husbandry and welfare tasks.</p> <p>AS.02.02.01.a. Identify and categorize tools, technology and equipment used in animal husbandry and welfare to help provide an abundant and safe food supply.</p> <p>AS.02.02.02.b. Analyze consumer concerns with animal production practices relative to human health.</p> <p>AS.02.02.03.a. Identify and describe animal tracking systems used in animal systems (e.g., livestock, companion animal, exotics, etc.).</p> <p>AS.02.02.02.a. Research and summarize animal production practices that may pose health risks.</p>	
<p>Unit 2: Issues Facing Animal Agriculture-</p> <ul style="list-style-type: none"> • Current Ag Issues 	<p>15%</p>	<p>CS.01. Analyze how issues, trends, technologies and public policies impact systems in the Agriculture, Food & Natural Resources Career Cluster.</p>	<p>CS.01.01. Performance Indicator: Research, examine and discuss issues and trends that impact AFNR systems on local, state, national and global levels.</p>	<p>CS.01.01.01.b. Analyze and summarize AFNR issues and their impact on local, state, national and global levels.</p> <p>CS.01.01.02.a. Research and summarize trends impacting AFNR systems.</p> <p>CS.01.01.02.b. Analyze current trends in AFNR systems and predict their impact on local, state, national and global levels.</p>	
<p>Unit 3: Wildlife Ecology</p> <ul style="list-style-type: none"> • Identify wildlife species 	<p>10%</p>	<p>AS.01. CCTC Standard: Analyze historic and current trends impacting the animal systems industry.</p>	<p>AS.01.02. Performance Indicator: Assess and select animal production methods for use in animal systems</p>	<p>AS.01.02. Performance Indicator: Assess and select animal production methods for use in animal systems based</p>	

<ul style="list-style-type: none"> Wildlife's impact on ecological processes Importance of wildlife for balanced system of production 			<p>based upon their effectiveness and impacts.</p>	<p>upon their effectiveness and impacts.</p> <p>AS.01.02.04.a. Identify and summarize wildlife management methods.</p> <p>AS.01.02.04.b. Research and summarize local wildlife populations, challenges and ecological measures that are being utilized.</p> <p>AS.01.02.04.c. Devise and evaluate plans to manage wildlife populations to achieve optimal ecological health.</p>	
<p>Unit 4: Environmental Impact</p> <ul style="list-style-type: none"> Impact of Animal production on the environment 	<p>15%</p>	<p>AS.08. CCTC Standard: Analyze environmental factors associated with animal production.</p>	<p>AS.08.01. Performance Indicator: Design and implement methods to reduce the effects of animal production on the environment.</p> <p>AS.08.02. Performance Indicator: Evaluate the effects of environmental conditions on animals and create plans to ensure favorable environments for animals.</p>	<p>AS.08.01.01.a. Identify and summarize the effects of animal agriculture on the environment (e.g., waste disposal, carbon footprint, air quality, environmental efficiencies, etc.).</p> <p>AS.08.01.01.b. Assess the effectiveness of methods of reducing the effects of animal agriculture on the environment.</p> <p>AS.08.01.01.c. Devise a plan that includes measures to reduce the impact of animal agriculture on the environment.</p> <p>AS.08.02.01.a. Research and summarize environmental conditions that impact animals (e.g., weather, sources of water, food resources, etc.).</p>	

