CareerClusters® PATHWAYS TO COLLEGE & CAREER READINESS
Agriculture, Food & Natural Resources

Learning that works for Colorado CTE®

Colorado CTE Course – Scope and Sequence

Course Name	**Advanced Animal Production A**		**Course Details** **Course = 0.50 Carnegie Unit Credit**	Level 4 course in the Animal Science Pathway. This is the third semester of content in the animal production strand.	
Course Description	Students will focus on the care, maintenance, and management of livestock and companion animal species. Advanced techniques in animal behaviors and handling, routine administration and surgical procedures, governmental regulations and programs, animal identification protocols and procedures, HACCP analysis and monitoring, and facilities equipment for large, small, and exotic/alternative animal production will be developed. Current animal agricultural issues will be research and addressed. The scientific processes of observation, hypothesizing, data gathering, interpretation, analysis, and application will be included. Career opportunities and education preparation will be examined. Learning activities are varied with classroom. Laboratory and field experiences will be required.				
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 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: Farm to Table- • Animal Supply	10%	**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.	**CS.02.02.** Examine the components of the AFNR systems and assess their impact on the local, state, national and global society and economy.	**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.). **CS.02.02.01.b.** Assess components within AFNR systems and analyze relationships between systems. **CS.02.02.02.a.** Define and summarize societies on local, state, national and global levels and describe how they relate to AFNR systems.	

				CS.02.02.02.b. Assess how people within societies on local, state, national and global levels.	
Unit 2: Genetics, DNA and Heritability • Meiosis and Mitosis • Chromosomes and DNA sequencing • Genetic Mutations and Disorders • Dominant and Recessive genes • Heritability and genetic variation	25%	**AS.04.** Apply principles of animal reproduction to achieve desired outcomes for performance, development and/or economic production.	**AS.04.02.** Apply scientific principles to select and care for breeding animals. *MATH: MA.HS.S.MD.A* *SCIENCE: SC.HS.2.9* *SC.HS.2.8*	**AS.04.02.01.a.** Summarize genetic inheritance in animals. **AS.04.02.02.b** Demonstrate how to determine probability trait inheritance in animals. **AS.04.02.02.a.** Identify and summarize inheritance and terms related to inheritance in animal breeding (e.g., dominate, co-dominate, recessive, homozygous, heterozygous, etc.). **AS.04.02.03.a.** Identify and summarize genetic defects that affect animal performance	
Unit 3: Animal Health • Healthy vs. Unhealthy characteristics • Common diseases and disease causing agents • Disease classification • Parasites	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.07.01.02.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.	

• Zoonotic diseases Vaccines and Antibiotics • Herd Health Plan			**AS.07.02.** Analyze biosecurity measures utilized to protect the welfare of animals on a local, state, national, and global level.	**AS.07.01.03.a.** List and summarize the characteristics of wounds, common diseases, parasites and physiological disorders that affect animals. **AS.07.01.03.b.** Identify and describe common illnesses and disorders of animals based on symptoms and problems caused by wounds, diseases, parasites and physiological disorders. **AS.07.01.03.c.** Treat common diseases, parasites and physiological disorders of animals according to directions prescribed by an animal health professional. **AS.07.01.04.c.** Design and implement a health maintenance and a disease and disorder prevention plan for animals in their natural and/or confined environments. **AS.07.02.01.a.** Summarize the importance of biosecurity to the animal industry at multiple levels (e.g., local, state, national, global). **AS.07.02.02.a.** Identify and describe zoonotic diseases including their historical significance and potential future implications.	

Course Name	Advanced Animal Production B	Course Details	

		Course = 0.50 Carnegie Unit Credit	Level 4 course in the Animal Science Pathway. This is the final semester of content in the animal production strand.
Course Description	Students will focus on the care, maintenance, and management of livestock and companion animal species. Advanced techniques in animal behaviors and handling, routine administration and surgical procedures, governmental regulations and programs, animal identification protocols and procedures, HACCP analysis and monitoring, and facilities equipment for large, small, and exotic/alternative animal production will be developed. Current animal agricultural issues will be research and addressed. The scientific processes of observation, hypothesizing, data gathering, interpretation, analysis, and application will be included. Career opportunities and education preparation will be examined. Learning activities are varied with classroom. Laboratory and field experiences will be required.		
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 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
Unit 1: Meat Science • Quality and Yield Grading • Indicators • Primal and Sub Primal Cuts ID • Retail cut ID • Retail cut cookery methods	25%	**FFPS.10** Meat Science	**FPPS.10.01** Apply principles of carcass evaluation.	**FPPS.10.01.a** Use visual appraisal to predict the quality and yield grade of a carcass. **FFPS.10.01.b** Define measurement tools to predict the quality and yield grade of carcass. **FPPS.10.01.c** Use measurement tools to predict the quality and yield grade of a carcass. **FPPS.10.01.d** Predict carcass quality based on live animal evaluation and husbandry practices. **FPPS.10.02.a** Define yield grade and calculate dressing	Meat Evaluation CDE

			FPPS.10.02 Determine yield grade and impact of product value. **FPPS.10.03** Identify meat cuts **FPPS.10.04** Determine quality grade and impact on product value.	percentages. **FPPS.10.02.b** Explain yield grade factors **FPPS.10.02.c** Evaluate carcass indicators to determine yield grade. **FPPS.10.03.a** Identify wholesale cuts. **FPPS.10.03.b** Identify Retail Cuts **FPPS.10.03.c** Explain the importance of cut identification as it relates to animal production. **FPPS.10.04.a** Define quality grade **FPPS.10.04.b** Explain quality grade factors. **FPPS.10.04.c** Evaluate carcass indicators to determine quality grade	
Unit 2: Evaluation and Selection • Evaluation and selection of animals for various scenarios	25%	**AS.06** Classify, evaluate, and select animals based on anatomical and physiological characteristics.	**AS.06.03** Select and train animals for specific purposes and maximum performance based on anatomy and physiology.	**AS.06.03.01.b** Compare and contrast desirable anatomical and physiological characteristics of animals within and between species. **AS.06.03.01.c** Evaluate and select animals to maximize performance based on anatomical and physiological characteristics that affect	

				health, growth, and reproduction. **AS.06.03.02.a** Evaluate an animal against its optimal anatomical and physiological characteristics. **AS.06.03.02.b** Compare and contrast procedures to sustainability and efficiently develop an animal to reach its highest performance potential with respect to its anatomical and physiological characteristics. **AS.06.03.02.c** Choose, implement, and evaluate sustainable and efficient procedures (e.g. selection, housing, nutrition, and management) to produce consistently high-quality animals that are well suited for their intended purposes. **AS.06.03.03.c** Evaluate and select animals to produce superior animal products based on industry standards.	
Unit 3: Agriculture Issues • Students will research the various current issues facing the animal production industry.	10%	**CS.01** Analyze how issues, trends, technologies, and public policies impact systems in the Agriculture, Food, and Natural Resources Career Cluster	**CS.01.01** Research, examine, and discuss issues and trends that impact AFNR systems on local, state, national, and global levels.	**CS.01.01.01.b** Analyze and summarize AFNR issues and their impact on local, state, national, and global levels. **CS.01.01.02.a** Research and summarize trends impacting AFNR systems. **CS.01.01.02.b** Analyze current trends in AFNR systems and predict their impact on local,	

				state, national, and global levels.	

CAS Academic Standards Alignment: Online Version: https://www.cde.state.co.us/apps/standards/**;** Download version: https://www.cde.state.co.us/apps/standards/

Reading, Writing, and Communicating:

Math:

- MA.HS.N-Q.A – Quantities: Reason quantitatively and use units to solve problems.
- MA.HS.S-MD.A – Use probability to make decisions: Calculate expected values and use them to solve problems.
-

Science:

- SC.HS.2.8 – The characteristics of one generation are dependent upon the genetic information inherited from previous generations.
- SC.HS.2.9 – Variation between individuals result from genetic and environmental factors.

Essential Skills:

Problem Solver:

- Critical Thinking and Analysis: The ability to apply a deliberate process of identifying problems, gathering information, and weighing possible solutions, including: making choices rooted in understanding patterns, cause-and-effect relationships, and the impacts that a decision can have on the individual and others.
- Creativity and innovation: the ability to demonstrate curiosity and imagination through experimenting with new and emerging ideas.

Community Member:

- Global and cultural awareness: the ability to collaborate with individuals from diverse backgrounds and/or cultures to address national and global issues, and to develop complex, appropriate, and workable solutions.

Communicator:

- Interpersonal Communication: the ability to establish and maintain healthy and supportive relationships, including: the capacity to communicate clearly by successfully conveying information and feelings, listening actively, setting boundaries, negotiating conflict constructively, and seeking or offering support and help when needed.