Colorado CTE Course – Scope and Sequence

Course Name	Introduction to Agriculture, Food and Natural Resources	Course Details	First course in the secondary course sequence for the Agriculture, Food and Natural Resources Cluster.
		Course = 0.50 Carnegie Unit Credit	Content in this course could be delivered at the middle school level if so desired.
Course Description	An introductory course for first year agriculture education students. This course introduces students to the foundational principles of agriculture, food and natural resources. Students will gain knowledge in career development, leadership, personal development, communications, animal science, plant science, natural resources, food science, power/structure and agribusiness.		
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 #	18001	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
Personal Leadership Development and the FFA Organization (***Traditions and structure***: History, Organization Structure (Local Chapter, State Association, National Organization) and Membership, Motto, Mission, Salute, Colors, Emblem, New Horizons, Code of Conduct, Official Dress, Creed)	10%	CRP.01. Act as a responsible and contributing citizen and employee. CRP.04. Communicate clearly, effectively and with reason. Career-ready individuals communicate thoughts, ideas and action plans with clarity, whether using written, verbal and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice and organization, and use	CRP.01.01. Model personal responsibility in the workplace and community. CRP.01.03. Identify and act upon opportunities for professional and civic service at work and in the community. CRP.04.01. Speak using strategies that ensure clarity, logic, purpose formal and informal settings. CRP.04.02. Produce clear, reasoned and coherent written and	CRP.01.01.02.a. Distinguish personal levels of responsibility, which can be applied in the workplace and community. CRP.01.01.02.b. Assess personal level of responsibility and examine opportunities for improvement. CRP.01.01.02.c. Model personal responsibility in workplace and community situations. CRP.01.03.01.a. Define and categorize opportunities for professional service at work and in the community (e.g., serve on committees, attend meetings, etc.).	FFA Leadership Development Events (Quiz Bowl, Creed Speaking, Agriscience Fair) FFA Degree Applications and Ceremonies Chapter and District FFA Meetings and Ceremonies

(**Essentials of a successful chapter**: Program of Activities, Meetings and Leadership, Officers, Ceremonies) (**Membership opportunities**: Degrees, Conferences and Conventions, CDEs and LDEs, Agriscience Fair, Community Service, Scholarships, Local Opportunities) (**Public Speaking**: Memorization Techniques, Characteristics of Quality, Speaking Presentation Styles, Creed)		effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome. CRP.05. Consider the environmental, social and economic impacts of decisions. Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organizations and the environment. They are aware of and utilize new technologies, understandings, procedures, materials and regulations affecting the nature of their work as it relates to the impact on the social condition, the environment and the profitability of the organization. CRP.06. Demonstrate creativity and innovation. Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner	visual communication in formal and informal settings. CRP.04.03. Model active listening strategies when interacting with others in formal and informal settings. CRP.05.01. Assess, identify and synthesize the information and resources needed to make decisions that positively impact the workplace and community. CRP.06.03. Create and execute a plan of action to act upon new ideas and introduce innovations to workplace and community organizations. CRP.09.01. Model characteristics of ethical and effective leaders in the workplace and community (e.g. integrity, self-awareness, self-regulation, etc.). CRP.09.02. Implement personal management skills to function effectively and efficiently in the workplace (e.g., time management, planning, prioritizing, etc.).	CRP.01.03.01.b. Assess available professional service opportunities at workplaces and in community (e.g., trainings, organizing events, etc.). CRP.01.03.01.c. Devise, implement, and evaluate strategies for involvement in professional service opportunities at work and in the com- munity (e.g., coaching/mentorship, presentations at meetings, etc.). CRP.01.03.02.a. Identify civic service opportunities in workplaces and the community (e.g., organizations, fundraising, etc.). CRP.01.03.02.b. Assess available civic service opportunities at workplaces and in the community (e.g., community events, attend meetings, etc.). CRP.01.03.02.c. Devise, implement, and evaluate strategies for personal involvement in civic service at work and in the community (e.g., volunteer at food pantry, community clean-up, join organizations or committees, etc.). CRP.04.01.01.a. Identify and categorize strategies for ensuring clarity, logic, purpose and professionalism in verbal and non-verbal communication (e.g., vocal tone, organization of thoughts, eye contact, preparation, etc.).	Chapter and District Officer Applications, Interviews, and Service FFA Committee Membership and Participation Fall Leadership Conference, State FFA Convention, National FFA Convention, Washington Leadership Conference Local Opportunities (i.e. County Fair, Lettering, Banquet Awards, Teams) Community Service and Fundraisers

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		to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization. CRP.09. Model integrity, ethical leadership and effective management. Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem. They thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.	CRP.09.03. Demonstrate behaviors that contribute to a positive morale and culture in the workplace and community (e.g., positively influencing others, effectively communicating, etc.).	CRP.04.01.02.a. Examine and assess personal ability to speak with clarity, logic, purpose and professionalism in formal and informal settings (e.g., speeches, interviews, presentations, oral reports, etc.). CRP.04.01.01.b. Analyze use of verbal and non-verbal communication strategies in work- place situations. CRP.04.01.01.c. Evaluate other's verbal and non-verbal communications (e.g., speeches, presentations, oral reports, etc.) and propose recommendations for improvement in clarity, logic, purpose and professionalism. CRP.04.01.02.b. Apply strategies for speaking with clarity, logic, purpose and professionalism in a variety of situations in formal and informal settings. CRP.04.01.02.c. Evaluate personal strengths and areas for growth with regard to speaking formally and informally with clarity, logic, purpose and professionalism, and identify ways to improve. CRP.04.02.01.b. Compare and contrast the structure of different forms of written and visual communication. CRP.04.02.02.a. Identify and examine methods for producing clear, reasoned and coherent written and visual communication that are	

| | | | | appropriate to the task, purpose and audience (e.g., audience analysis, objective development, etc.) CRP.04.02.02.b. Apply techniques for ensuring clarity, logic and coherence to edit written and visual communications (e.g., emails, reports, presentations, technical documents, diagrams, etc.). CRP.04.02.02.c. Compose clear and coherent written documents and visuals (e.g., agendas, audio-visuals, drafts, forms, etc.) that are adapted to the audience needs in both formal and informal settings.

CRP.04.03.01.a. Research and summarize components of active listening (e.g., eye contact, have an open mind, restate, etc.). CRP.04.03.01.b. Apply active listening strategies (e.g., be attentive, observe non-verbal cues, ask clarifying questions, etc.).

CRP.05.01.01.a. Examine and describe the steps in the decision-making process used in the workplace and community. CRP.05.01.01.b. Analyze how the process of decision making is used in workplace and community situations. CRP.05.01.01.c. Evaluate workplace and community decision-making processes | |

				and devise strategies for improvement.	
				CRP.05.01.02.a. Examine and explain the relationship between information, resources and good decision making in workplace and community situations.	
				CRP.05.01.02.b. Analyze past workplace and community situations to determine if appropriate information and resources were used to make an effective decision.	
				CRP.05.01.02.c. Evaluate workplace and community situations and recommend the information and resources needed to support good decisions.	
				CRP.05.01.03.a. Classify the types of information (e.g., data, research, procedures, regulations, etc.) and resources (e.g., human, financial, technology, time, etc.) that maybe used to make workplace and community decisions.	
				CRP.05.01.03.b. Analyze workplace and com- munity decisions and assess the information and resources used to make those decisions.	
				CRP.05.01.03.c. Synthesize information and resources and apply to workplace and community situations to make positive decisions.	
				CRP.06.03.01.a. Examine workplace and community situations to identify opportunities for improvement	

				through the introduction of new ideas and innovations. CRP.06.03.01.b. Assess and communicate the risks and benefits of applying new ideas and innovations to the workplace and community. CRP.06.03.01.c. Design a plan of action to introduce a new idea or innovation into the workplace and community. CRP.09.01.01.a. Identify and summarize the characteristics of ethical and effective leaders in workplace and community settings. CRP.09.02.01.a. Identify and summarize personal management skills necessary to function effectively in the workplace (e.g., time management, planning, prioritizing, etc.). CRP.09.02.02.a. Examine and describe personal management skills (e.g., time management, prioritizing, setting goals, etc.) that are individually implemented and demonstrated in workplace and community situations. CRP.09.02.02.b. Conduct a self-assessment of personal management skills used in daily workplace or community situations. CRP.09.02.02.c. Model personal management skills and identify opportunities for continuous improvement.	

				CRP.09.03.01.a. Identify and summarize respectful and purposeful behaviors that contribute to positive morale and culture in workplace and community settings (e.g., positively influencing others, effectively communicating, etc.). CRP.09.03.02.a. Examine personal levels of respectful and purposeful behaviors and summarize how they are demonstrated (e.g., treat others with respect, model professionalism, etc.).	
Agriculture Industry Awareness (Agriculture History, Today's Agriculture Conversations and Ag Values, Introduction to Ag Ed (3 circle model), Agriculture Industry and Career Pathways)	10%	CS.01. Analyze how issues, trends, technologies and public policies impact systems in the Agriculture, Food & Natural Resources Career Cluster. 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.01.01. Research, examine and discuss issues and trends that impact AFNR systems on local, state, national and global levels. CS.01.02. Examine technologies and analyze their impact on AFNR systems. CS.01.03. Identify public policies and examine their impact on AFNR systems.	CS.01.01.01.a. Examine historical and current data to identify issues impacting AFNR systems. CS.01.01.02.a. Research and summarize trends impacting AFNR systems. CS.01.02.01.a. Research technologies used in AFNR systems. CS.01.02.02.a. Compare and contrast AFNR systems before and after the integration of technology. CS.01.03.01.a. Summarize public policies affecting AFNR systems. CS.01.03.02.a. Identify influential historical and current public policies that impact AFNR systems.	FFA Career and Leadership Development Events
Using AET (AET Profile and Journals, AET Record Keeping Scenario,	5%	CRP.03. Attend to personal health and financial well-being.	CRP.03.02. Design and implement a personal financial management plan.	CRP.03.02.01.a. Research and examine components in a personal financial management plan (e.g.,	FFA Degree Applications, FFA Proficiency Applications,

					income, expense, budgeting, savings, credit, etc.). CRP.03.02.01.b. Analyze management tools available for managing personal finances (e.g., software, calendars, banks, financial institutions, etc.). CRP.03.02.02.a. Examine and categorize personal financial practices (e.g., earning, spending, use of management tools, credit, etc.).	and FFA Grant Applications FFA Participation, Class, and Community Service Journals
Foundational SAE AET Entries)					
Career Exploration and Planning Identifying individual interests, likes and skills; Exploring agricultural career opportunities and pathways; Identifying entry requirements for careers;	3%		CS.05. Describe career opportunities and means to achieve those opportunities in each of the Agriculture, Food & Natural Resources career pathways.	CS.05.01. Evaluate and implement the steps and requirements to pursue a career opportunity in an AFNR career pathway. CS.05.02. Examine and choose career opportunities that are	CS.05.01. Evaluate and implement the steps and requirements to pursue a career opportunity in an AFNR career pathway. CS.05.02. Examine and choose career opportunities that are matched to personal skills, talents, and career goals in an AFNR pathway of interest. CS.05.01.02.a Examine the educational, training and experiential requirements to pursue a career in an AFNR pathway (e.g., degrees, certifications, training, internships, etc.). SAMPLE ACTIVITY: *Write a one-page career summary with a list of 10 measurable steps to take to be qualified for a career in an AFNR pathway.*	

			matched to personal skills, talents, and career goals in an AFNR pathway of interest.	CS.05.02.02.a. Research and describe careers in each of the AFNR pathways and choose potential careers connecting to personal interests and skills. SAMPLE ACTIVITY: Complete career interest inventory and summarize results in a paper or presentation.	
Career Ready Practices Understanding what these are; Why they are important in the world of work; How do we develop and build the career ready practices	2%	CRP.01. Act as a responsible and contributing citizen and employee.	CRP.01.01. Model personal responsibility in the workplace and community.	CRP.01.01.01.a. Define personal responsibility and distinguish how it applies in workplace and community (e.g., make educated choices, listen and follow directions, ask for help when needed, meet expected standards, etc.). SAMPLE ACTIVITY: *Write a two-page personal reflection about responsibility and its role in the workplace and community.* CRP.01.01.02.b Assess personal level of responsibility and examine opportunities for improvement. SAMPLE ACTIVITY: *Collect and compare a personal, peer and mentor rating of your level of responsibility.*	
		CRP.04. Communicate clearly, effectively and with reason.	CRP.04.01. Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.		

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		CRP.06. Demonstrate creativity and innovation.	CRP.06.01. Synthesize information, knowledge and experience to generate original ideas and challenge assumptions in the workplace and community	CRP.04.01.01.a. Identify and categorize strategies for ensuring clarity, logic, purpose and professionalism in verbal and non-verbal communication (e.g., tone, organization of thoughts, eye contact, preparation, etc.). SAMPLE ACTIVITY: *Make a list of 10 personal strategies that enhance verbal and non-verbal communication.* CRP.06.01. Synthesize information, knowledge and experience to generate original ideas and challenge assumptions in the workplace and community. SAMPLE ACTIVITY: *Compare three ways of generating ideas, i.e. brainstorming, mind mapping, etc.*	
Personal Financial Management and Planning What is financial management; How does personal finance management differ from business management;	2%	CRP.03. Attend to personal health and financial well-being.	CRP.03.02. Design and implement a personal financial management plan.	CRP.03.02.01.a. Research and examine components in a personal financial management plan (e.g., income, expense, budgeting, savings, credit, etc.). SAMPLE ACTIVITY: *Print and read three online*	

What are the components of personal financial management			CRP.03.02. Design and implement a personal financial management plan.	*periodicals or peer-reviewed articles about personal financial management.* CRP.03.02.02.a. Examine and categorize personal financial practices (e.g., earning, spending, use of management tools, credit, etc.). SAMPLE ACTIVITY: *Create a personal budget and track monthly financial activity.*	
Workplace Safety How does workplace safety differ from classroom and lab safety; Why is workplace safety so important; How does safety differ from job to job.	2%	CS.03. Examine and summarize the importance of health, safety and environmental management systems in AFNR workplaces.	CS.03.03. Apply health and safety practices to AFNR workplaces. CS.03.04. Use appropriate protective equipment and demonstrate safe and proper use of AFNR tools and equipment.	CS.03.03.03.a. Examine and categorize examples of how to avoid health or safety risks in AFNR workplaces. SAMPLE ACTIVITY: *Develop a list of 10 common workplace accidents and ways to avoid them.* CS.03.04.01.a. Identify and differentiate the appropriate protective equipment for the safe use and operation of specific tools and equipment (e.g. PPE, etc.). SAMPLE ACTIVITY: *Create a word document with a list of personal protective equipment and their definitions.*	

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| | | | | CS.03.04.02.a. Identify standard tools, equipment and safety procedures related to AFNR tasks.

SAMPLE ACTIVITY: *Create a poster with commonly used tools in the AFNR field and the proper safety procedures associated with each.*

CS.03.04.03.a. Read and interpret operating instructions related to operation, storage and maintenance of tools and equipment related AFNR tasks.

SAMPLE ACTIVITY: *Complete an SAE Risk Assessment and reflect on the results.* | |
| **Agricultural Literacy & Exploration** Expanding your understanding of agriculture and the pathways you are interested in. | 1% | CS.01. Analyze how issues, trends, technologies and public policies impact systems in the Agriculture, Food & 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.01.03. Identify public policies and examine their impact on AFNR systems. | CS.01.01.02.a. Research and summarize trends impacting AFNR systems.
SAMPLE ACTIVITY: *Find three to four peer-reviewed articles about AFNR trends and summarize each article in a paragraph or less.*

CS.01.03.01.a. Summarize public policies affecting AFNR systems.
SAMPLE ACTIVITY: *Contact a local legislator to discuss public policies affecting AFNR systems* | |

		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.	*and summarize the interview in a word document.* CS.01.03.02.a. Identify influential historical and current public policies that impact AFNR systems. SAMPLE ACTIVITY: *Read and print three to four peer-reviewed research articles about current and historical public policies affecting AFNR systems.* 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.). SAMPLE ACTIVITY: *Create a Power Point containing all AFNR systems and include their smaller compo-nents with visuals.* CS.02.02.03.a. Examine and summarize the components of the agricultural economy	

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				(e.g., environmental, crops, livestock, etc.). SAMPLE ACTIVITY: *Create a visual presentation highlighting all components of the agricultural economy. Include short descriptions for each component.*	
Supervised Agricultural Experience Programs (***SAE for All Guide,The need for record keeping, Personal and Business Financial Records:*** Evaluate financial, physical, and human resources Types and purposes of contracts Understanding the importance and types of inventories Understanding the importance and use of budgeting Balance Sheets, Income and Expense Statements,	5%	CRP.01. Act as a responsible and contributing citizen and employee. CRP.06. Demonstrate creativity and innovation. CRP.08. Utilize critical thinking to make sense of problems and persevere in solving them.	CRP.01.01. Model personal responsibility in the workplace and community. CRP.06.01. Synthesize information, knowledge and experience to generate original ideas and challenge assumptions in the workplace and community. CRP.08.01. Apply reason and logic to evaluate workplace and community situations from multiple perspectives. CRP.08.02. Investigate, prioritize and select solutions to solve problems in the workplace and community.	CRP.01.01.01.a. Define personal responsibility and distinguish how it applies in the workplace and community (e.g., make educated choices, listen and follow directions, ask for help when needed, meet expected standards, etc.). CRP.06.01.01.a. Identify and summarize steps for generating ideas used in the workplace and community. CRP.08.01.02.a. Examine and identify opportunities to apply reason, logic and multiple perspectives to solve problems in workplace and community situations. CRP.08.02.02.a. Identify and summarize steps in the decision-making process to solve workplace and community problems.	FFA Degree Applications, FFA Proficiency Applications, and FFA Grant Applications

Understanding timecards, taxes, and paychecks Using data to manage an agricultural business or employment experience (Balance Sheets, Income and Expense Statements, Profit and Loss, etc.)				
Technical content – Agriculture Business Pathway				
Careers in Agri-Business	2	CS.05. Describe career opportunities and means to achieve those opportunities in each of the Agriculture, Food & Natural Resources career pathways.	CS.05.02 Examine and choose career opportunities that are matched to personal skills, talents, and career goals in an AFNR pathway of interest.	CS.05.02.01.a. Examine and categorize careers in each of the AFNR pathways. CS.05.02.02.a. Research and describe careers in each of the AFNR pathways and choose potential careers connecting to personal interests and skills.	
Agri-Business in the Value Chain (could be taught via the Dairy Value Chain Curriculum developed by Western Dairy/DairyMAX)	4	ABS.04. Develop a business plan for an AFNR business.	ABS.04.02. Develop production and operational plans for an AFNR business. *ELA:RW.H1.3.2* *RW.H1.2.3* *RW.H2.2.3*	ABS.04.02.02.a. Devise strategies to illustrate the production process of an AFNR business to produce a specific agricultural product.	
Compare Business Structures (Sole Proprietorship, Co-op, Partner, Corporation, etc)	1	ABS.04. Develop a business plan for an AFNR business.	ABS.04.01. Analyze characteristics and planning requirements associated with developing business plans for different types of AFNR businesses. *ELA: RW.H1.2.3* *RW.H2.2.3* *RW.H1.3.2* *RW.H2.3.2* *RW.H1.4.1* *RW.H2.4.1*	ABS.04.01.02.a. Categorize the characteristics of the types of ownership structures used in AFNR businesses (e.g., sole proprietorships, cooperatives, partnerships and corporations).	
Develop a Language of/Understanding the	3	ABS.02. Use record keeping to accomplish AFNR	ABS.02.01. Apply fundamental accounting	ABS.02.02.01.a. Compare and contrast the different types of	

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Purpose of Records. Hit on key terms, common financial reports, and data entry (common reports may include balance sheets and cash flow statements).		business objectives, manage budgets and comply with laws and regulations. ABS.02. Use record keeping to accomplish AFNR business objectives, manage budgets and comply with laws and regulations.	principles, systems, tools and applicable laws and regulations to record, track and audit AFNR business transactions (e.g., accounts, debits, credits, assets, liabilities, equity, etc.). *MATH: MA.HS.S-IC.B MA.HA.N-Q.A* ABS.02.02. Assemble, interpret and analyze financial information and reports to monitor AFNR business performance and support decision-making (e.g., income statements, balance sheets, cash-flow analysis, inventory reports, break-even analysis, return on investment, taxes, etc.). *ELA:RW.H1.4.1 RW.H2.4.1 MATH: MA.HS.S-ID.C MA.HS.S-ID.B MA.HS.N-Q.A*	financial reports (e.g., income statements, cash flow statements, equity statements, etc.) and their frequency of use (e.g., daily, weekly, monthly, quarterly, annual) for monitoring AFNR business performance. ABS.02.01.02.a. Research and summarize the features of different tools and services for recording, tracking and auditing AFNR business transactions (e.g., electronic tools, paper-based tools, consultative services, online services, banking services, etc.).	
Technical content – Animal Science Pathway				
Unit 1: Students will demonstrate an understanding of the effect of animals have had on society through their domestication and usage	**1%**	**AS.01. Analyze historic and current trends impacting the animal systems industry.**	**AS.01.01. Evaluate the development and implications of animal origin, domestication and distribution on production practices and the environment.** *SCIENCE.SC.HS.2.11*	**AS.01.01.01.a. Identify and summarize the origin, significance, distribution and domestication of different animal species.**	
Unit 2: Students will analyze and evaluate the many facets of the livestock industry that affect their daily lives	5%		AS.01.02. Assess and select animal production methods for use in animal systems based upon their effectiveness and impacts.	AS.01.02.01.c. Evaluate the effectiveness of different production methods and defend the use of selected methods using data and evidence.	

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from the "Farm to the Table." Students will demonstrate an understanding of the various production methods used in livestock production and develop competency in basic animal husbandry practices				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.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.02.01.03.a. Distinguish between animal husbandry practices that promote animal welfare and those that do not. AS.02.01.03.b. Analyze and document animal husbandry practices and their impact on animal welfare. AS.02.02.03.a. Identify and describe animal tracking systems used in animal systems (e.g., livestock, companion animal, exotics, etc.). 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.	
Unit 3: Students will identify the various types and characteristics of livestock, the breeds of common livestock and companion animal species, and the external anatomy and nomenclature of	4%	AS.06. Classify, evaluate and select animals based on anatomical and physiological characteristics.	AS.06.01. Classify animals according to taxonomic classification systems and use (e.g. agricultural, companion, etc.).	AS.06.01.02.a. Compare and contrast major uses of different animal species (e.g., agricultural, companion, etc.). AS.06.01.03.b. Analyze the visual characteristics of an animal or animal product and select correct classification terminology when referring to	

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livestock and companion animal species				companion and production animals. AS.06.01.03.a. Identify and summarize common classification terms utilized in animal systems (e.g., external and internal body parts, maturity, mature male, immature female, animal products, breeds, etc.). AS.06.01.03.b. Analyze the visual characteristics of an animal or animal product and select correct classification terminology when referring to companion and production animals.	
Technical content – Food Science Pathway				
Understanding the Food Industry	2%	FPPS.01 Understand the food products and processing industry.	FPPS.01.01 Determine the meaning and importance of food science FPPS.01.02 Understand the history and global significance of food systems.	FPPS.01.01.a Define food science. FPPS.01.01.b Explain the importance of food. FPPS.01.01.c Integrate concepts of food science into other pathways/agriculture FPPS.01.02.a Define major components of food systems.	
Careers in Food Products & Science	2%	CS.05 Describe career opportunities and means to achieve those opportunities in each of the Agriculture, Food, & Natural Resources career pathways.	CS.05.02 Examine and choose career opportunities that are matched to personal skills, talents, and career goals in an AFNR pathway of interest.	CS.05.02.01.a Examine and categorize careers in each of the AFNR pathways. CS.05.02.01.b Assess personal skills and align them with potential career opportunities in AFNR pathways.	
Trends in Food Science	4%	FPP.04 Explain the scope of the food industry and the historical and current developments of food products and processing.	FPP.04.02 Evaluate the significance and implications of changes and trends in the food products and processing	FPP.04.02.02.a Identify and explain the environmental and safety concerns about food supply.	

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			industry in the local and global food systems.	FPP.04.02.02.b Research and summarize current issues related to the safety and environmental concerns about food and food processing (e.g. GMOs, irradiation, microorganisms, contamination, etc)	
Understanding food processing	2%	FPP.03 Select and process food products for storage, distribution, and consumption.	FPP.03.02. Design and apply techniques of food processing, preservation, packaging, and presentation of distribution and consumption of food products.	FPP.03.02.02.a Differentiate between methods and materials used for processing food for different markets (e.g. fresh food products, ready to eat food products, etc)	
Technical content – Natural Resources / Environmental Science Pathway					
Careers in Natural Resources	2%	CS.05. Describe career opportunities and means to achieve those opportunities in each of the Agriculture, Food & Natural Resources career pathways.	CS.05.02. Examine and choose career opportunities that are matched to personal skills, talents, and career goals in an AFNR pathway of interest.	CS.05.02.01.a. Examine and categorize careers in each of the AFNR pathways. CS.05.02.02.a. Research and describe careers in each of the AFNR pathways and choose potential careers connecting to personal interests and skills.	
Identifying kinds of Natural Resources	3%	NRS.01. Plan and conduct natural resource management activities that apply logical, reasoned and scientifically based solutions to natural resource issues and goals.	NRS.01.01. Apply methods of classification to examine natural resource availability and ecosystem function in a particular region.	NRS.01.01.01.a. Summarize and classify the different kinds of natural resources using common classification schemes (e.g., living versus non-living, renewable versus nonrenewable, native versus introduced, etc.). NRS.01.01.01.b. Assess the characteristics of a natural resource to determine its classification.	
Discuss the different environment cycles and their roles in Natural Resources, (water cycle, carbon cycle, ect.).	3%	NRS.01. Plan and conduct natural resource management activities that apply logical, reasoned and scientifically based solutions	NRS.01.03. Apply ecological concepts and principles to atmospheric natural resource systems. *ELA: RST.11-12.1 RST. 11-12.7*	NRS.01.03.01.a. Classify different kinds of biogeochemical cycles and the role they play in natural resources systems.	

			RST.11-12.8 SCIENCE: SC.HS.3.4 SC.HS.3.7 SC.HS.3.11 SC.HS.3.12 MATH: MA.HS.N-Q.A, MA.HS.S-ID.A, MA.HS.S-IC.A MA.HS.S-IC.B		
Human interactions and the impacts on Natural Resource Systems	2%	NRS.02. Analyze the interrelationships between natural resources and humans.	NRS.02.02. Assess the impact of human activities on the availability of natural resources. ELA: RST.11-12.1 RST.11-12.2 RST.11-12.7 RST.11-12.8 WHST.9-10.2 WHST.11-12.2 WHST.9-10.7 WHST.11-12.7 SCIENCE: SC.HS.2.6 SC.HS.3.9 SC.HS.3.11 SC.HS.3.12 MATH: MA.HS.N-Q.A	NRS.02.02.01.a. Summarize the relationship between natural resources, ecosystems and human activity. NRS.02.02.01.b. Assess and explain how different kinds of human activity affect the use and availability of natural resources (i.e., agriculture, industry, transportation, etc.).	
Technical content – Plant Science Pathway					
Scope of the Plant Science Industry ✓ Agronomy. Horticulture, Green Industry ✓ Aspects of the Industry in Colorado	3%	PLSC.01 Understand the structure and significance of plant agriculture systems.	PLSC.01.03 Understand plant production industry segments.	PLSC.01.03.a Define plant system industry segments.	
Classification of Plants and Crops ✓ Cereal grains ✓ Forages ✓ Oil crops ✓ Fiber Crops	2%	PS.02 Apply principles of classification, plant anatomy, and plant physiology to plant production and management.	PS.02.01 Classify plants according to taxonomic systems.	PS.02.01.02.b Identify and describe important plants to agricultural and ornamental plant systems by common names.	

✓ Vegetable crops ✓ Fruits & Nuts ✓ Ornamental crops ✓ Medicinal Crops ✓ Plant Life Cycle Classifications					
Soils ✓ Components ✓ Textures ✓ Profiles	3%	PS.01 Develop and implement a crop management plan for a given production goal that accounts for environmental factors.	PS.01.02. Prepare and manage growing media for use in plant systems.	PS.01.02.01.a Identify the major components of growing media and describe how growing media support plant growth. PS.01.02.01.b Describe the physical and chemical characteristics of growing media and explain the influence they have on plant growth.	
Ag & Water ✓ Water rights ✓ Irrigation & Water use	2%	PLSC.05 Understand the history and management of water resources in plant systems.	PLSC.05.01 Understand the history and background of water use in plant systems.	PLSC.05.01.a Identify important historical events related to water use, pollution, and conservation. PLSC.05.01.b Describe how past events have shaped current policy regarding Colorado Water Law.	
Technical content – Power, Structural & Technical Systems Pathway					
Overview and Careers in the PSTS Industry	2%	PSTS.01 Understand the agriculture mechanical and technical systems and its relationship to the industry of agriculture.	PSTS.01.01 Understand the history and global significance of agricultural mechanical and technical systems. _SCIENCE: SC.HS.3.11_ _SC.HS.1.6_ _SC.HS.1.9_	PSTS.01.01.a Define major components of agricultural mechanical and technical systems (engineers, producers, fabricators, and retailers) PSTS.01.01.b Define the major historical events and trends and in agriculture mechanics and technology to global agriculture production.	

				PSTS.01.01.c Compare industrialized nations to non-industrialized nations and their ability to produce food.	
Lab Safety	3%	PST.01 Apply physical science principles and engineering applications to solve problems and improve performance in AFNR power, structural, and technical systems.	PST.01.02 Apply physical science and engineering principles to design, implement, and improve safe and efficient mechanical systems in AFNR situations. _SCIENCE:_ _SC.HS.1.6_ _SC.HS.1.7_ _SC.HS.1.9_	PST.01.02.02.c Devise and document processes to safely implement and evaluate the safe use of AFNR related tools, machinery, and equipment.	
Proper Use of tools and fabrication processes	5%	PST.01 Apply physical science principles and engineering applications to solve problems and improve performance in AFNR power, structural, and technical systems.	PST.01.02 Apply physical science and engineering principles to design, implement, and improve safe and efficient mechanical systems in AFNR situations. _SCIENCE:_ _SC.HS.1.6_ _SC.HS.1.7_ _SC.HS.1.9_	PST.01.02.01.a Compare and contrast application of simple machines in AFNR related mechanical systems. PST.01.02.03.b Select, maintain, and demonstrate the proper use of tools, machines, and equipment used in different AFNR related mechanical systems.	

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:

- RW.H1.2.3 – Utilize context, parts of speech, grammar, and word choice to understand narrative, argumentative, and informational texts.
- RW.H2.2.3 – Understand how language influences the comprehension of narratives, argumentative, and informational texts.
- RW.H1.3.2 – Write informative/explanatory texts using complex ideas and organizational structure and features that are useful to audience comprehension.
- RW.H2.3.2 – Write informative/explanatory texts to examine and convey complex ideas through the effective selection, organization, and analysis of content.
- RW.H1.4.1 – Synthesize multiple, authoritative literary and/or informational sources, creating cohesive research projects that show an understanding of the subject.

- RW.H2.4.1 – Synthesize multiple, authoritative literary and/or informational sources to answer questions or solve problems, producing well-organized and developed research projects that defend information, conclusions, and solutions.

Math:

- MA.HS.S-ID.B – Interpreting Categorical & Quantitative Data: Summarize, represent, interpret data on two categorial and quantitative variables.
- MA.HS.S-ID.C – Interpreting Categorical & Quantitative Data: Interpret linear models.
- MA.HS.S-IC.B – Making inferences & Justifying Conclusions: Make inferences and justify conclusions from sample surveys, experiments, and observational studies.
- MA.HS.N-Q.A – Quantities: Reason quantitatively and use units to solve problems.

Science:

- SC.HS.1.6 – Energy is a quantitative property of a system that depends on the motion and interactions of matter and radiation within that system.
- SC.HS.1.7 – Energy cannot be created or destroyed, but it can be transported from one place to another and transferred between systems.
- SC.HS.1.9 – Although energy cannot be destroyed, it can be converted to less useful forms as it is captured, stored, and transferred.
- SC.HS.2.6 – A complex set of interactions determine how ecosystems respond to disturbances.
- SC.HS.2.11 – Genetic variation among organisms affect survival and reproduction.
- SC.HS.3.4 – Earth's systems, being dynamic and interacting, cause feedback effects that can increase or decrease the original changes, and these effects occur on different time scales, from sudden to very long term tectonic cycles.
- SC.HS.3.7 – The role of radiation from the sun and its interactions with the atmosphere, ocean, and land are the foundational for the global climate system. Global climate models are used to predict future changes, including changes influences by human behavior and natural factors.
- SC.HS.3.9 – Resource availability has guided the development of human society and use of natural resources has associated costs, risks, and benefits.
- SC.HS.3.11 – Sustainability of human societies and the biodiversity that supports them requires responsible management of natural resources, including the development of technologies.
- SC.HS.3.12 – Global climate models used to predict future climate change continues to improve our understanding of the impact of human activities on the global climate system.

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:

- Social Awareness: the ability to understand the perspectives of, empathize with, feel compassion for, and recognize strengths in others, including those from diverse backgrounds, cultures, and contexts and how they affect social interactions.
- Civic Engagement: The ability to develop and apply knowledge, skills, and habits gained from experiences – within communities of diverse perspectives – to address issues, affect change, and/or solve problems.
- 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.

Empowered Individual:

- Self-Awareness: the ability to understand one's own emotions, thoughts, and values, and how personal actions and emotions influence behavior across contexts, including: the capacity to recognize one's strength and limitations with a well-grounded sense of confidence and purpose.
- Career Awareness: The ability to apply the knowledge and understanding of how one's dreams, experiences, and interests translate into career fulfillment and lifelong pursuits in local, regional, national, and global career pathways and opportunities.