

Colorado AFNR Course Scope and Sequence

Course Name	Principles of Food Science		Course Details	Level 2 course following Introduction to Agriculture A & B in the Food Science pathway.		
			Course = 0.50 Carnegie Unit Credit			
<b>Course Description</b>	Students will apply principles of nutrition, biology, chemistry, and human behavior to the food we eat every day. Refine skills in measurement, following recipes, interpreting food labels and identifying safe storage and processing techniques.					
<b>Note:</b>	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 #	18305	Schedule calculation based on 60% of a semester instructional time. 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 <a href="https://www.cde.state.co.us/standardsandinstruction/essentialskills">https://www.cde.state.co.us/standardsandinstruction/essentialskills</a>						
Unit Number, Title and Brief Description	Suggested % of Instructional Time	CTE or Academic Standard Alignment	Competency / Performance Indicator	Outcome / Measurement	CTSO Integration	
<b>Unit 1: Food Supply and Need, Value-Added Production Cycle</b>	5%	<b>FPP.04.</b> Explain the scope of the food industry and the historical and current developments of food product and processing.	<b>FPP.04.02</b> Evaluate the significance and implications of changes and trends in the food products and processing industry in the local and global food systems.	<b>FPP.04.02.01.a</b> Describe and explain the components of the food products and processing industry (e.g. processing, distribution, byproducts, etc)		
<b>Unit 2: Careers in the food products and processing sector</b>	5%	<b>CS.05</b> Describe career opportunities and means to achieve those opportunities in each of the Agriculture, Food, and Natural Resources career pathway.	<b>CS.05.01</b> Evaluate and implement the steps and requirements to pursue a career opportunity in each of the AFNR career pathways (e.g. goals, degrees, certifications, resumes, cover letter, portfolio, interviews, etc)	<b>CS.05.01.01.b</b> Create a personal plan outlining goals and steps to obtain a career in an AFNR pathway.  <b>CS.05.01.02.b</b> Analyze personal skillset and create a plan for obtaining the required education, training, and experiences to obtain a career in AFNR pathway.		

				<p><b>CS.05.01.03.b</b> Assess personal goals, experiences, education, and skillsets and organize them to produce the appropriate tools and develop the skills to effectively communicate about one's qualification for an AFNR career.</p> <p><b>CS.05.02</b> Examine and choose career opportunities that are matched to personal skills, talents, and career goals in an AFNR pathway of interest.</p> <p><b>CS.05.02.02.a</b> Research and describe careers in each of the AFNR pathways and choose potential careers connecting to personal interests and skills.</p>	
<b>Unit 3: Food Preparation and Tools</b>	5%	<b>FPP.03</b> Select and process food products for storage, distribution, and consumption.	<b>FPP.03.02</b> Design and apply techniques of food processing, preservation, packaging, and presentation for distribution and consumption of food products.	<b>FPP.03.02.01.a</b> Identify and explain English and metric measurements used in the food products and processing industry	
<b>Unit 4: pH in Nutrition and Food</b>	3%	<b>FPP.03</b> Select and process food products for storage, distribution, and consumption.	<b>FPP.03.02</b> Design and apply techniques of food processing, preservation, packaging, and presentation for distribution and consumption of food products.	<b>FPP.03.02.03.b</b> Analyze and document food preservation processes and methods on a variety of food products.	
<p><b>Unit 5: Food Chemistry</b></p> <ul style="list-style-type: none"> <li>Study, lab, and quiz for each nutrient (carbohydrates, lipids, proteins, water, vitamins, and minerals)</li> </ul>	21%	<b>FPP.02</b> Apply principles of nutrition, biology, microbiology, chemistry, and human behavior to the development of food products.	<b>FPP.02.02</b> Apply principles of microbiology and chemistry to develop food products to provide a safe, wholesome, and nutritious food supply for local and global food systems.	<p><b>FPP.02.02.01.a</b> Examine and describe the basic chemical makeup of different types of food.</p> <p><b>FPPS.02.02.01.b</b> Explain how the chemical and physical properties of</p>	

				<p>foods influence nutritional value and eating quality.</p> <p><b>FPPS.02.02.01.c</b> Design and conduct experiments to determine the chemical and physical properties of food products.</p>	
<p><b>Unit 6: Food Preservation</b></p> <ul style="list-style-type: none"> <li>• Canning</li> <li>• Pressure Cooking</li> <li>• Dehydration</li> </ul>	5%	<p><b>FPP.03</b> Select and process food products for storage, distribution, and consumption.</p>	<p><b>FPP.03.02</b> Design and apply techniques of food processing, preservation, packaging, and presentation for distribution and consumption of food products.</p>	<p><b>FPP.03.02.03.a</b> Identify methods of food preservation and give examples of food preserved by each method</p> <p><b>FPP.03.02.03.b</b> Analyze and document food preservation processes and methods on a variety of food products.</p>	
<p><b>Unit 7: Food Physics</b></p> <ul style="list-style-type: none"> <li>• Study of yeast, baking power, soda, emulsions, Maillard reaction</li> </ul>	7%	<p><b>FPP.02</b> Apply principles of nutrition, biology, microbiology, chemistry, and human behavior to the development of food products.</p>	<p><b>FPP.02.02</b> Apply principles of microbiology and chemistry to develop food products to provide a safe, wholesome, and nutritious food supply for local and global food systems.</p>	<p><b>FPP.02.02.01.b</b> Explain how the chemical and physical properties of food influence nutritional value and eating quality.</p> <p><b>FPP.02.02.02.a</b> Identify common food additive and identify their properties (e.g. preservatives, antioxidants, buffers, stabilizers, colors, flavors, etc)</p> <p><b>FPP.02.02.02.b</b> Describe the purpose of common food additives and how they influence the chemistry of food.</p>	
<p><b>Unit 8: Meat Science</b></p> <ul style="list-style-type: none"> <li>• Quality grades</li> <li>• Retail cuts</li> </ul>	5%	<p><b>FPP.03</b> Select and process food products for storage, distribution, and consumption.</p>	<p><b>FPP.03.01</b> Implement selection, evaluation, and inspection techniques to ensure safe and quality food products.</p>	<p><b>FPP.03.01.01.c</b> Outline procedures to assign quality and yield grades to food products according to industry standards.</p>	

<b>Unit 9: Food Safety &amp; Bioterrorism</b>	5%	<b>FPP.01</b> Develop and implement procedures to ensure safety, sanitation and quality in food products and processing facilities.	<b>FPP.01.02</b> Apply food safety and sanitation procedures in the handling and processing of food products to ensure food quality.	<b>FPP.01.02.01.c</b> Identify sources of contamination in food products and/or processing facilities and develop ways to eliminate contamination.  <b>FPP.01.02.04.a</b> Describe the effects of food borne pathogens have on food products and humans.	
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**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:**

**Science:**

**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.

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.

Empowered Individual:

- **Self-management:** the ability to manage one's emotions, thoughts, and behaviors effectively in different situations and to achieve goals and aspirations, including: the capacity to delay gratification, manage stress, stay productive and accountable, and feel motivation & agency to accomplish personal/collective goals.
- **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.