



CTSO Course Alignments: Advanced Food Science

Below you will find standards for the Advanced Food Science course aligned with competitive events from appropriate career and technical student organizations (CTSOs). Knowing the aligned events for your organization will allow you to have additional tools for teaching course standards, as well as increase student engagement and preparation in your CTSO activities. The final column recommends potential tools from other CTSO organizations. Even if your students are not participating in these organizations, available rubrics, tools, and materials can also add to the instructional resources at your disposal for best teaching your content.

Important to note: While the aligned activities below can be important tools in teaching course standards, it is important to note that events may not cover a standard in its entirety and should not be the sole instructional strategy used to address a standard.

	STANDARD	ALIGNED FFA COMPETITIVE EVENTS/PROGRAMS	OTHER POTENTIAL CTSO TOOLS & RESOURCES
1	Use local news media, organizational websites, and real-time labor market information to investigate occupations in food science. Compare and contrast the knowledge, skills, and abilities necessary for employment, as well as the typical level of education required. (TN Reading 2, 9; TN Writing 4, 7, 9)	<ul style="list-style-type: none"> • FFA: Job Interview 	<ul style="list-style-type: none"> • FCCLA: Job Interview; Career Investigation; Entrepreneurship • HOSA: Job Seeking Skills • SkillsUSA: Job Interview; Entrepreneurship; Employment Application Process • TSA: Career Preparation
2	Review common laboratory safety procedures for tool and equipment operation in the agricultural and biosystems engineering laboratories, including but not limited to accident prevention and control procedures. Demonstrate the ability to follow safety and operational procedures in a lab setting and complete a safety test with 100 percent accuracy. (TN Reading 3; ARNR CS)		<ul style="list-style-type: none"> • HOSA: Biomedical Laboratory Science • SkillsUSA: Occupational Health and Safety • TSA: Biotechnology Design
3	Review common laboratory safety procedures for tool and equipment operation in the food science laboratories, including but not limited to accident prevention and control procedures. Demonstrate the ability to follow safety and operational procedures in a lab setting and complete a safety test with 100 percent accuracy. (TN Reading 3)		<ul style="list-style-type: none"> • HOSA: Biomedical Laboratory Science • SkillsUSA: Occupational Health and Safety • TSA: Biotechnology Design

4	Demonstrate the ability to prepare basic personal and business records to complete taxes, employment, and SAE related applications, including resume, budgets, income statements, balance sheets, cash flow statements, profit and loss statements, and equity statements. (TN Reading 3; TN Writing 4; TN Math N-Q)	<ul style="list-style-type: none"> • FFA: Job Interview 	<ul style="list-style-type: none"> • FBLA: Business Financial Plan; Business Plan
5	Identify major species and breeds of livestock utilized for red meat production. Describe the fabrication, processing, packaging, and quality analysis of red meats and their by-products.	<ul style="list-style-type: none"> • FFA: Food Science and Technology, Meats Evaluation and Technology 	
6	Explain carcass preparation and fabrication procedures and identify associated equipment, safety, sanitation, and quality control procedures. Demonstrate in a live setting or in a presentation format the ability to identify wholesale and retail cuts of meat and meat by-products, and correlate them to major muscle groups. (TN Reading 3)	<ul style="list-style-type: none"> • FFA: Food Science and Technology, Meats Evaluation and Technology 	
7	Analyze the United States Department of Agriculture (USDA) inspection and grading procedures and compose an argumentative essay justifying their purpose in the food industry, developing claim(s) and counterclaim(s) with specific evidence from case studies found in news media. Describe the principles of quality and yield grading. Demonstrate in a live setting or in a presentation format the ability to perform the evaluation and grading of carcasses, wholesale cuts, and retail cuts to determine maturity, final quality grade, and final yield grade, and provide written and oral justification for evaluation conclusions. (TN Reading 1, 3; TN Writing 1, 4, 9)	<ul style="list-style-type: none"> • FFA: Food Science and Technology, Meats Evaluation and Technology 	<ul style="list-style-type: none"> • FBLA: Business Ethics • HOSA: Researched Persuasive Speaking
8	Demonstrate in a live setting or in a presentation the ability to perform methods of further processing fabrication for processed and value added products including comminuted meat products, emulsions, and cured meats. Using quantitative reasoning and appropriate units, calculate proper meat product formulations based upon required protein levels and USDA allowances for various products. (TN Reading 3; TN Math N-Q)	<ul style="list-style-type: none"> • FFA: Food Science and Technology, Meats Evaluation and Technology 	
9	Identify major breeds of livestock utilized for dairy production. Describe the products, by-products, processing, packaging, and quality analysis associated with each breed.	<ul style="list-style-type: none"> • FFA: Food Science and Technology, Milk Quality and Products 	
10	Summarize milk quality test and testing procedures in an explanatory narrative. Demonstrate in a live setting or in a presentation the ability to perform quality evaluations of milk and dairy products, providing written and oral justification for evaluation conclusions. (TN Reading 2, 3; TN Writing 2, 4)	<ul style="list-style-type: none"> • FFA: Milk Quality and Products 	<ul style="list-style-type: none"> • HOSA: Extemporaneous Presentation; Research Persuasive Speaking
11	Describe milk preparation and processing procedures, addressing procedures specific to equipment, safety, sanitation, and quality control. Analyze the composition of milk and examine concepts and principles that verify the scientific foundation for the pasteurization process. (TN Reading 3, 8; TN Writing 9; TN Math N-Q)	<ul style="list-style-type: none"> • FFA: Milk Quality and Products 	

12	Identify varieties and characteristics of cultured and frozen milk products. Demonstrate in a live setting or presentation the ability to follow procedures used to process buttermilk, yogurt, and ice cream, attending to appropriate ratios and units. (TN Reading 3; TN Math N-Q)	<ul style="list-style-type: none"> • FFA: Milk Quality and Products 	
13	Identify varieties, characteristics, and classifications of cheeses. Demonstrate in a live setting or presentation format the ability to follow procedures used to process, classify, and grade cheese, attending to appropriate ratios and units. (TN Reading 3; TN Math N-Q)	<ul style="list-style-type: none"> • FFA: Milk Quality and Products 	
14	Identify major poultry breeds and fish species utilized for meat and egg production. Describe the fabrication, processing, packaging, and quality analysis of poultry meat, eggs, and fish. (TN Reading 3)	<ul style="list-style-type: none"> • FFA: Food Science and Technology, Poultry Evaluation 	
15	Compare and contrast the carcass preparation and fabrication procedures in poultry and fish, addressing procedures specific to equipment, safety, sanitation, and quality control. Demonstrate in a live setting or in a presentation the ability to identify retail cuts of poultry, fish, and related by-products. (TN Reading 3)	<ul style="list-style-type: none"> • FFA: Food Science and Technology, Poultry Evaluation 	
16	Outline the United States Department of Agriculture (USDA) inspection procedures and system for classes, standards, and grades of poultry products and fish. Demonstrate in a live setting or in a presentation the ability to perform the evaluation and grading of carcasses and parts of chickens and turkeys, pre-cooked, further processed, and poultry meat products, providing written and oral justification for evaluation and grading scores. Evaluate and grade eggs for interior and exterior quality and provide written and oral justification for evaluation conclusions. (TN Reading 3; TN Writing 1, 4)	<ul style="list-style-type: none"> • FFA: Poultry Evaluation 	<ul style="list-style-type: none"> • HOSA: Researched Persuasive Speaking
17	Explain the processing, packaging, and quality analysis of vegetables, fruits, nuts and their by-products.	<ul style="list-style-type: none"> • FFA: Food Science and Technology 	<ul style="list-style-type: none"> • HOSA: Extemporaneous Writing • TSA: Extemporaneous Presentation
18	Describe preparation and processing procedures for vegetables, fruits, nuts, and their by-products, addressing procedures specific to equipment, safety, sanitation, and quality control. Research and cite texts explaining the use of various monitoring systems to appraise food quality, such as the Brix scale. (TN Reading 1, 8; TN Writing 4, 7)	<ul style="list-style-type: none"> • FFA: Food Science and Technology 	
19	Identify laws regulating the packaging and labeling of food products, and summarize industry requirements in an explanatory text. Demonstrate in a live setting or in a presentation the ability to perform packaging and labeling procedures for different food products. (TN Reading 2, 3; TN Writing 4)	<ul style="list-style-type: none"> • FFA: Agricultural Issues 	<ul style="list-style-type: none"> • FCCLA: Advocacy

20	Research storage and transportation issues pertaining to packaged food products and the extent to which noted evidence and reasoning justifies implications for safety and quality, citing specific examples from news media and academic journals. (TN Reading 1, 6, 8; TN Writing 7, 9)	<ul style="list-style-type: none"> • FFA: Agricultural Issues 	<ul style="list-style-type: none"> • FCCLA: Advocacy
21	Write an informative essay illustrating the application of fundamental economic principles such as supply, demand, and profit to the food science industry. Describe marketing considerations and methods of merchandising food products. Discuss how quality and yield grade factors affect product marketing. Revise, edit, and rewrite essay with peer feedback. (TN Writing 2, 5)	<ul style="list-style-type: none"> • FFA: Agriscience Fair 	<ul style="list-style-type: none"> • HOSA: Researched Persuasive Speaking
22	Develop a food product and create a processing, packaging, and marketing plan incorporating the skills learned in this course. (TN Writing 2, 4)	<ul style="list-style-type: none"> • FFA: Marketing Plan 	<ul style="list-style-type: none"> • FCCLA: Food Innovations
23	Review data from news media and company product recall notices to explore consumer satisfaction issues. Cite specific evidence to assess the impact of organic, natural, ethnic, religious-based, and other specialized processing methods in the food industry. Compare and contrast the advantages and disadvantages of value added and specialty products and conduct research to evaluate and summarize consumer interest and trends related to these products. (TN Reading 1, 2, 9; TN Writing 7, 9)	<ul style="list-style-type: none"> • FFA: Agricultural Issues 	<ul style="list-style-type: none"> • FBLA: Business Ethics • FCCLA: Advocacy
24	Investigate the food product development process. Evaluate the use of food batch procedures for the purpose of economic efficiency. Describe the application of sensory evaluation methods to test food product flavor, appearance, and texture by quantitative description and simple difference testing. (TN Writing 8; TN Math N-Q)	<ul style="list-style-type: none"> • FFA: Agriscience Fair 	
25	Identify consumer concerns related to food quality and safety (such as antibiotic use, genetically modified organisms (GMOs), pesticide use, and food borne illnesses), and discuss the economic implications when low-quality and unsafe foods enter the market.	<ul style="list-style-type: none"> • FFA: Agricultural Issues 	<ul style="list-style-type: none"> • FBLA: Business Ethics • FCCLA: Advocacy • HOSA: Biomedical Debate • TSA: Debating Technological Issues
ALL	CAN BE USED WITH ALL/MOST STANDARDS	<ul style="list-style-type: none"> • FFA: Food Science and Technology 	<ul style="list-style-type: none"> • FCCLA: Illustrated Talk; Chapter in Review Display; Chapter in Review Portfolio • HOSA: Prepared Speaking • SkillsUSA: Career Pathways Showcase; Job Skills Demonstration A; Job Skills Demonstration O; Prepared Speech; Extemporaneous Speaking; Chapter Display • TSA: Prepared Presentation