

## Food Science CTAG Alignment

This document contains information about one (1) proposed Career-Technical Articulation Number (CTAN) for the proposed Food Science Guide (CTAG).

### CTAN:

- Introduction to Food Processing (CTFSC001)

### ODE Course Alignment:

- Science and Technology of Food (011010)

**Introduction to Food Processing** - Potential CTAN alignment with the Agriculture, Food & Natural Resources Bioscience Pathway in the Agriculture and Environmental Systems Career Field Technical Content Standards of the Ohio Department of Education.

**General Course Description:** Students will learn the application of science through experiential learning environments in the production and evaluation of foods. Includes basic food regulations, sanitation, and formulation as they apply to the production of high quality, safe food products.

### Advising Notes:

- Students must have successfully completed or concurrently complete a year of high school biology.
- Students must have successfully completed or concurrently complete a year of high school chemistry.
- Students must access credit within 3 years of program completion.

**Semester Credit Hours:** 3.0

### Alignment:

<b>Learning Outcomes</b> <i>Asterisked Learning Outcomes are considered essential</i> <b>The student will be able to:</b>	<b>Competencies from the Agriculture, Food &amp; Natural Resources Bioscience Pathway of the Agriculture and Environmental Systems Career Field Technical Content Standards</b>
1. Analyze unit operations and processes required to produce a safe food product.*	<b>Outcome 7.4 Food Production and Processing</b> 7.4.5. Process food through mixing, grinding, pumping and washing and describe the physical change in the food product. 7.4.8. Compare and contrast storage and distribution methods for shelf-stable and non-shelf-stable products.
2. Explain the chemistry required to produce a high quality food product.*	<b>Outcome 7.1 The Science of Food</b> 7.1.4. Assess water's function in food processing, distinguish between moisture content and water activity, and differentiate how water activity affects food functionality and storage. 7.1.6. Relate the functions and physical properties of simple and complex carbohydrates, lipids, vitamins, minerals and proteins (i.e., functional ingredients) to the manufacturing of food products.

	7.1.10 Identify the functions of food additives in food products.
3. Evaluate the quality and safety of food products.*	<p><b>Outcome 7.5 Food Product Development</b></p> <p>7.5.1. Conduct a sensory evaluation of food products.</p> <p>7.5.7. Estimate the shelf life and potential changes in attributes over time.</p> <p><b>Outcome 7.6 Food Safety and Security</b></p> <p>7.6.7. Determine critical safety parameters using government regulations for handling and storage.</p>
4. Describe the desirable and undesirable impacts microorganisms have in a food product.*	<p><b>Outcome 7.2 Quality Assurance</b></p> <p>7.2.1. Describe the types of spoilage (e.g., oxidation, microbial), their sources, and impact.</p> <p><b>Outcome 7.4 Food Production and Processing</b></p> <p>7.4.10 Differentiate among beneficial microorganisms (e.g., bacteria, mold, yeast) and their uses in food production.</p>
5. Identify major processing equipment utilized for basic unit operations, describe its function, and identify the major components.*	<p><b>Outcome 7.4 Food Production and Processing</b></p> <p>7.4.1. Describe the process used in thermal and non-thermal preservation, control the variables, and apply processing methods (e.g., retorting, high pressure, ultra-high temperature [UHT], high temperature short time [HTST], chilling, freezing).</p> <p>7.4.2. Describe the process of dehydration and concentration, control the variables that affect the quality of dried foods and apply the methods.</p>
6. Evaluate food sanitation and waste management practices*	<p><b>Outcome 7.6 Food Safety and Sanitation</b></p> <p>7.6.2. Establish and implement procedures for preoperational inspection and cleaning.</p> <p>7.6.3. Identify the sources and types of food-borne illness and pathogens and prevent their entrance into the food supply.</p> <p>7.6.5. Conduct a good manufacturing practice (GMP) audit, review the findings, and implement corrective actions.</p> <p>7.6.6. Identify and monitor hazards and critical control points and apply hazard analysis and critical control point (HAACP) corrective action procedures.</p> <p>7.6.9. Identify the government agencies involved in the production and regulation of food products.</p>