CITATION-Standards from Ohio Department of Education
http://education.ohio.gov/Topics/Career-Tech/Agricultural-and-Environmental-Systems

Course: Applications of Food Science and Safety
Subject Code: 011030

Course Description: Learners demonstrate principles and practices of food safety, processing and packaging to develop solutions for problems in food production, handling and storage. Learners will examine a full range of food processing techniques. Learners will examine the process of food product development and techniques used to measure food sensory aspects, shelf life and food stability. Learners will examine government regulation impact on labeling, new packaging technologies, harvesting, transportation, and the environment. Food laws, regulations and regulatory and commercial grading standards will be examined.

Unit: Food Safety and Security & Quality Assurance
Learners will identify types of spoilage microorganisms as well as critical control attributes of food products. Learners will demonstrate methods of evaluating quality applied to food as well as describe the rationale for establishing valid quality assurance programs. They will also discuss and identify the physical, chemical, and microbiological hazards and their role in foodborne illness and the safety of the food supply. Learners will design and implement a Hazard Analysis Critical Control Point System in relation to food production and processing

Outcome 7.6 Food Safety and Sanitation: Develop a food safety and sanitation plan, addressing processing facility needs and contamination points.

Competencies:
7.6.4. Develop and implement a pest control system.
7.6.5. Conduct a good manufacturing practice (GMP) audit, review the findings and implement corrective actions.

Outcome 7.7 Biosecurity: Connect the sources and causes of contamination and develop the protocols to implement bio-security procedures.

Competencies:
7.7.5. Implement biosecurity procedures to prevent cross-site contamination (e.g., proper use and disposal of personal protective equipment [PPE] from site to site, vehicle cleaning between farm and processing site).

Unit: Food Chemistry
Learners will examine the chemical aspects of food with an emphasis on the functional properties and chemical reactions of the major components during food processing and storage. Furthermore, learners will examine functions of key food additives and other ingredients.

Outcome 7.1 The Science of Food: Differentiate the structures, functions and sources of basic functional ingredients and the roles they play in the development and manufacturing of food products for human nutrition.

Competencies:
7.1.1. Classify the matter in foods by elements, compounds, mixtures, chemical bonds, organic and inorganic properties and physical and chemical changes.
7.1.3. Measure the acidity, alkalinity and molarity of food products and describe the role of pH in food processing and storage.
7.1.5. Describe the composition, structure and sources of sugars, complex carbohydrates, lipids, vitamins, minerals and proteins (i.e., functional ingredients) and their nutritional contributions to dietary needs.
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.