

Food Science - Kansas Family and Consumer Sciences Education - Course #: 22203

CIP Codes: Restaurant and Event Management (12.0504) Food Products and Processing (01.0401)

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COMPREHENSIVE STANDARD: 23.0
Integrate knowledge, skills, and practices required for careers in food science, food technology, dietetics and nutrition. (National Standard: 9.0) 9.0

A Benchmark: 23.1 Apply basic science concepts of nutrition and nutritional therapy in humans. 23.1

- 1 Analyze the nutritional needs of organisms (individuals) and calculate the relationship between calories, food sources (plant and animal), and energy (carbohydrates, fats, protein) and water balance for metabolic function. 23.1.1
- 2 Compare and contrast nutritional information for macro and micro nutrients to support health of humans. 23.1.2
- 3 Demonstrate ability to design a selective menu reflecting a modified diet for standard and special dietary restrictions (e.g. food allergens). 23.1.3

B Benchmark 23.2 Apply risk management procedures to food safety, food testing, and sanitation. 23.2

- 1 Scientifically analyze sources of food borne illness and prevention strategies. 23.2.1
- 2 Analyze Occupational Safety and Health Administration's (OSHA) Right to Know Law and Material Safety Data that regulate food quality, protect consumer rights, and handle consumer complaints. 23.2.2
- 3 Apply concepts of industry standards for food management safety and sanitation programs including: time, temperature, date markings, cross contamination, hand washing, and personal hygiene. 23.2.3
- 4 Analyze and practice concepts of the Hazard Analysis Critical Control Point (HACCP) during all food handling processes to minimize the risk of food borne illness. 23.2.4

C Benchmark 23.3 Analyze food science, food safety and nutrition principles impacted by hereditary and environmental conditions. 23.3

- 1 Analyze nutrient requirements for the organism (individual) across the lifespan. 23.3.1
- 2 Analyze the scientific differences of nutrition obtained from animal and plant sources that impact the health of a living organism (human being). 23.3.2
- 3 Analyze the physical and chemical nature of foods as based upon acid base principles and how it impacts food production practices. 23.3.3
- 4 Assess the influence of socioeconomic and psychological factors of food, nutrition, and behavior on organisms (individual) that leads to healthy choices (including obesity prevention). 23.3.4
- 6 Critique the nutritional value of foods, use of preservatives and food availability of local sourcing (farm to table) and imported foods. 23.3.6
- 5 Critique the selection and processing of natural foods and genetically modified foods from a single cell organism (seed) through the ecosystems of food production. 23.3.5
- 7 Analyze food growing practices (organic vs traditional production) on the health of living organisms (humans). 23.3.7
- 8 Categorize foods into exchange groups (including dietary guidelines and special dietary guidelines). 23.3.8
- 9 Compare and contrast relationship of food additives to food allergies. 23.3.9

D Benchmark 23.4 Apply concepts using the scientific method and current technology to develop food products. 23.4

- 1 Analyze factors that impact food preferences in the development and marketing of food. 23.4.1
- 2 Analyze data thru statistical analysis of food ingredients and food labels of natural and genetically modified foods. 23.4.2
- 3 Apply scientific process skills when analyzing the structure and composition of food and their relationship to health and wellness. 23.4.3
- 4 Apply concepts of standard operating procedures to maintain test kitchen, laboratory equipment, and safety procedures in food production. 23.4.4
- 5 Demonstrate the controlled sensory tasting procedure, including observations and rating techniques. 23.4.5

E Benchmark 23.5 Demonstrate food science concepts, dietetics, and nutrition principles and culinary practices. 23.5

- 1 Analyze recipe/formula proportions using chemical symbols and mathematical formulas and equations. 23.5.1
- 2 Examine the types, functions, sources, and deficiencies of vitamins, minerals, and phytonutrients in a variety of menus for the living organisms (individuals). 23.5.2
- 3 Demonstrate concepts of food preparation, production, and testing by implementing chemical and physical changes (i.e. emulsification, pasteurization, fermentation) to the state of matter. 23.5.3
- 4 Analyze concept of heat transfer in food preparation due to chemical and physical changes altering the atmospheric conditions and impact on food product quality. 23.5.4
- 5 Create standardized recipes/formulas using chemical symbols 23.5.5
- 6 Demonstrate knowledge of food science, food safety, nutrition and health connections through the purchase, preparation, preservation, and storage of food in a variety of situations. 23.5.6
- 7 Create new food products based upon application of scientific principles to meet an identified human need(s). 23.5.7
- 8 Utilize Food Code Points in food preparation and food preservation to prevent food borne illnesses. 23.5.8
- 9 Apply scientific concepts in food preparation and production testing to enhance food safety. 23.5.9

F Benchmark: 23.6 Enhance career readiness through practicing skills in food science, food technology, dietetics, and nutrition industries. 23.6

- 1 Analyze career options and requirements for food science, food technology, dietetics, and nutrition industries. 23.6.1
- 2 Evaluate personal qualifications, interests, values, and educational needs for employment in food science industry. 23.6.2
- 3 Use leadership and teamwork skills in collaborating with others to accomplish lab goals and objectives. 23.6.3
- 4 Solve problems using creativity, innovation and critical thinking skills independently and in teams. 23.6.4
- 5 Implement calculations procedures that provide cost effective products. 23.6.5
- 6 Analyze the impact of food science, food technology, dietetics, and nutrition occupations at the local, state, national, and global levels to determine economic impact. 23.6.6
- 7 Develop and/or organize a portfolio (electronic or physical) to document work-based learning opportunities in food science, food technology, dietetics, and nutrition careers. 23.6.7