Kansas CTE

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 nutrtion. (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. Scientificially 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 scienetifc 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, pastuerization, 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 scienctific 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