



Art & Science of Foods I

Approved by KSD Board of Education: (May 2017)

Course Description:

The Family and Consumer Science curriculum outlines the transferable skills and performance based competencies for students to become informed, confident, and competent individuals capable of adapting and managing the challenges of living and working in a diverse, global society. Students enrolled in Family and Consumer Science courses will engage in relevant and meaningful learning experiences and apply their critical thinking skills to construct meaning and make informed decisions around the consumption and production of resources in an ever-changing world.

Art and Science of Foods (Foods & Nutrition 1) is a course that offers authentic opportunities for students to investigate the principles of food preparation as they build a foundation to become self-sufficient in accessing healthy foods. Students will engage in the engineering design process as a framework to motivate interdisciplinary thinking, inspire future exploration and provide real life connections for the students to utilize in their learning.

Grade Level: 9th-12th Grade (0.5 Credits)

Unit Scope and Sequence

Unit 1: A Day in the Kitchen

Unit 2: The Dimensions of Dairy

Unit 3: The Power of Proteins

Unit 4: The Flavors of Fruits & Vegetables

Unit 5: The Top Chef

Course Enduring Understandings:

- Procedures prevent accidental injury in the kitchen.
- There are basic principles of preparation for grains, dairy, protein, fruits and vegetables.
- All nutrients have a unique function and are reduced with some cooking methods.
- Information on the food product label helps to make informed decisions when purchasing food.
- The art of cooking requires skills and knowledge.

Course Essential Questions:

- What actions can a person take to be safe in the kitchen?
- What are the basic principles of preparation for grains, dairy, protein, fruits and vegetables?
- How can nutrients be preserved when preparing food?
- How could the information on the food product label help you make informed decisions about the food you buy?

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Unit 1: A Day in the Kitchen

The art of cooking requires skill and knowledge. In this unit, students will analyze conditions and practices that promote kitchen safety, food sanitation principles, and preparation techniques when planning and preparing food products. The design thinking process will be introduced as a framework to motivate interdisciplinary thinking, inspire future exploration and provide real life connections for the students to utilize in their learning.

Unit Essential Learning Targets	
<i>Enduring Understandings</i>	<i>Essential Questions</i>
• The art of cooking requires skill and knowledge. • It is important to practice appropriate procedures in the kitchen to prevent accidental injury. • The design of the different tools is intentional to make food preparation more efficient.	• What actions can a person take to be safe in the kitchen? • Why is sanitation important and how are food borne illnesses prevented? • How does the design of the different tools affect the completion of the cooking task? • What impact does measuring have on cooking and baking recipes, and why is it important to measure accurately? • Why is it important to follow directions in a recipe?
<i>Students must know:</i>	<i>Students must be able to:</i>
• Commonly used basic equivalents: ○ 3 tsp = 1 Tbsp ○ 16 Tbsp = 1 cup ○ 8 oz = 1 cup ○ 1/2 cup = 8 Tbsp = 1 stick of butter ○ 16 oz = 1lb • cross contamination • E. Coli • Salmonella • Yield • Pack • Level • Listeria • Botulism • Safety is taking the necessary precautions in order to prevent danger, risk or injury. • Sanitation is maintaining clean conditions to prevent disease and promote good health. • Appropriate measuring equipment, techniques, and tools for food preparation • Proper techniques that are used to measure ingredient quantities.	• Demonstrate safe and sanitary kitchen procedures to enhance their cooking techniques throughout the course. • Demonstrate proper measuring techniques of various ingredients. • Identify appropriate measuring equipment and techniques for dry and liquid ingredients. • Determine proper techniques to effectively prepare food products. • Utilize 3 measurement tools to demonstrate knowledge of portion control and measurement techniques. • Identify characteristics of major food borne pathogens, their role in causing illness, foods involved in outbreaks, and methods of prevention. • Demonstrate safe food handling and preparation techniques that prevent cross contamination from potentially hazardous foods, between raw and ready-to-eat foods, and between animal and fish sources and other food products. • Analyze factors that contribute to food

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Unit 1: A Day in the Kitchen

	borne illness. - Analyze conditions and practices that promote safe food handling - Analyze food borne illness factors, including causes, foods at risk, and methods of prevention commercially and by individuals and families. - Analyze recipe formats and identify proper measuring equipment, techniques, abbreviations, and equivalents to effectively prepare the food product.
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National Standards for Family and Consumer Sciences Education

Demonstrate food safety and sanitation procedures (8.2).

Supporting Standards:

- Identify characteristics of major foodborne pathogens, their role in causing illness, foods involved in outbreaks, and methods of prevention (8.2.1).
- Practice standard personal hygiene and wellness procedures (8.2.5).
- Demonstrate safe food handling and preparation techniques that prevent cross contamination from potentially hazardous foods and food groups 8.2.7).

Demonstrate professional food preparation methods and techniques for all menu categories to produce a variety of food products that meet customer needs (8.5)

Supporting Standards:

- Demonstrate professional skills in safe handling of knives, tools, and equipment (8.5.1).
- Demonstrate knowledge of portion control and proper scaling and measurement techniques (8.5.3).

Apply risk management procedures to food safety, food testing, and sanitation (9.2)

Supporting Standards:

- Analyze factors that contribute to food borne illness (9.2.1)
- Use the Hazard Analysis Critical Control Point (HACCP) during all food handling processes (the flow of food) to minimize the risks of food borne illness (9.2.4).
- Demonstrate practices and procedures that assure personal and workplace health and hygiene (9.2.5).
- Demonstrate standard procedures for receiving, storage, and preparation of raw and prepared foods (9.2.6).

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Unit 2: The Dimensions of Dairy

All nutrients have a unique function. In this unit, students will identify, describe, and demonstrate the principles of preparation, proper tools and equipment, various cooking techniques (tempering) and ways to avoid curdling and scorching when cooking with dairy products.

Unit Essential Learning Targets	
<i>Enduring Understandings</i>	<i>Essential Questions</i>
• Dairy is essential in a person's diet. • Calcium is an important nutrient provided through dairy. • Dairy requires intentional cooking techniques. • Food labels provide essential information in choosing healthy dairy products. • Every person requires 3 cups of dairy per day. • Dairy products are ready to eat and use as ingredients in dishes.	• How do I choose dairy products wisely? • How can I consume calcium as a non-dairy eater? • How can I use dairy products to enhance the flavor of other foods? • What do I need to consider when choosing a cheese for a cooked dish? • Why should I consider when analyzing a food label from a dairy product?
<i>Students must know:</i>	<i>Students must be able to:</i>
• Three cups of dairy is essential in a daily diet. • Dairy encompasses cheese, milk, yogurt, frozen dairy products and a variety of non-calcium items. • Non-dairy eaters can obtain calcium from a variety of non-dairy items. • Dairy requires intentional cooking techniques. • All milk products are pasteurized. • Vocabulary: Pasteurize, homogenized, scorching, scalding, curdling, tempering, processed cheese, hard cheese, fresh cheese	• Make an educated choice when choosing dairy products. • Prepare a variety of dairy products. • Demonstrate the principles of cooking with different dairy products. • Identify the nutritional value of different dairy products.

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Unit 2: The Dimensions of Dairy

Missouri Learning Standards

Demonstrate professional food preparation methods and techniques for all menu categories to produce a variety of food products that meet customer needs (8.5)

Supporting Standards:

- Demonstrate professional skills in safe handling of knives, tools, and equipment (8.5.1).
- Demonstrate knowledge of portion control and proper scaling and measurement techniques (8.5.3).
- Apply the fundamentals of time, temperature, and cooking methods to cooking, cooling, reheating, and holding of a variety of foods (8.5.4).

Apply risk management procedures to food safety, food testing, and sanitation (9.2)

Supporting Standards:

- Use the Hazard Analysis Critical Control Point (HACCP) during all food handling processes (the flow of food) to minimize the risks of food borne illness (9.2.4).
- Demonstrate practices and procedures that assure personal and workplace health and hygiene (9.2.5).
- Demonstrate standard procedures for receiving, storage, and preparation of raw and prepared foods (9.2.6).

Apply basic concepts of nutrition and nutrition therapy in a variety of settings, considering social, geographical, cultural, and global influences (9.4)

Supporting Standards:

- Analyze nutritional needs of individuals (9.4.1).
- Design instruction on nutrition to promote wellness and disease prevention (9.4.5).

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Unit 3: The Power of Proteins

All nutrients have a unique function. In this unit, students will identify, describe, and demonstrate the principles of preparation, proper tools and equipment, various cooking techniques (roasting, sauteing, pan frying and grilling) and seasoning when cooking with protein products (eggs, legumes and ground meat).

Unit Essential Learning Targets	
<i>Enduring Understandings</i>	<i>Essential Questions</i>
- Proteins are essential in a person's diet. - Eggs, legumes, meats and poultry are protein products. - Proteins require different cooking techniques. - Proteins vary in nutritional value. - Proteins are a major nutrients for the body due to the energy (calories) they provide. - Certain proteins need to be cooked to specific temperatures to avoid ill born	- How do I include protein in my daily diet? How much protein is required in my daily diet? What is a lean protein? - Why is it important to chose a lean protein? How do I prepare different protein options? - What do I need to look for on a food label to make healthy protein choices? - How do I avoid cross-contamination? - What are the rules when cooking different proteins?
<i>Students must know:</i>	<i>Students must be able to:</i>
- Eight ounces of seafood is the recommended weekly intake. The daily serving of protein products. - The selection and use of the proper equipment when producing protein products. - Nutritional value depends on how proteins are processed. - A variety of protein products include but are not limited to: eggs, legumes, meats, poultry, and seafood. Different proteins require different cooking techniques. - Vocabulary: dry cooking, moist cooking, soaking, complete protein, incomplete protein, broiling, grilling, roasting, pan frying, sauteing.	- Describe the nutritional value of proteins. - Identify factors affecting the selections of proteins. - Describe how to properly store proteins to maintain their quality. - Describe the principles and methods of cooking proteins. - Prepare a variety of protein products. - Analyze protein product labels. - Analyze the characteristics of protein products.

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Unit 3: The Power of Proteins

Missouri Learning Standards

Demonstrate professional food preparation methods and techniques for all menu categories to produce a variety of food products that meet customer needs (8.5)

Supporting Standards:

- Demonstrate professional skills in safe handling of knives, tools, and equipment (8.5.1).
- Demonstrate knowledge of portion control and proper scaling and measurement techniques (8.5.3).
- Apply the fundamentals of time, temperature, and cooking methods to cooking, cooling, reheating, and holding of a variety of foods (8.5.4).

Apply risk management procedures to food safety, food testing, and sanitation (9.2)

Supporting Standards:

- Use the Hazard Analysis Critical Control Point (HACCP) during all food handling processes (the flow of food) to minimize the risks of food borne illness (9.2.4).
- Demonstrate practices and procedures that assure personal and workplace health and hygiene (9.2.5).
- Demonstrate standard procedures for receiving, storage, and preparation of raw and prepared foods (9.2.6).

Demonstrate food science, dietetics, and nutrition management principles and practices (9.6).

Supporting Standards:

- Build menus to customer/ client preferences (9.6.1).
- Manage food production to meet needs and preferences of diverse customer populations (9.6.5).

Demonstrate principles of food biology and chemistry (9.7).

Supporting Standards:

- Explain the properties of elements, compounds, and mixtures in foods and food products (9.7.1).
- Relate the composition of lipids and proteins to their functions in foods and their impact on food preparation and nutrition (9.7.5).

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Unit 4: The Flavors of Fruits and Vegetables

All nutrients have a unique function. In this unit, students will identify, describe, and demonstrate the principles of preparation, tools and equipment, various cooking techniques (simmering, boiling,roasting, sauteing, pan frying and grilling) and seasoning when cooking with fruits and vegetables products.

Unit Essential Learning Targets	
<i>Enduring Understandings</i>	<i>Essential Questions</i>
• Fruits and vegetables provide essential nutrients and need to be consumed daily. • Cooking method determines the nutritional value • Heat and water change the texture, color and flavor of fruits and vegetables and impact nutritional value. • Difference between maturity and ripeness of fruits and vegetables • how to prevent enzymatic brown • Proper techniques to store different fresh fruits and vegetables • Seasonings enhance the flavor of fruits and vegetables. •	• How can I incorporate fruits and vegetables in my diet on a daily basis? • Why are some fruits and vegetables more expensive during a particular season? • What is the nutritional value when comparing fresh, frozen, canned and dried?
<i>Students must know:</i>	<i>Students must be able to:</i>
• Fruit and vegetables are high in fiber and vitamins. • Choosing a variety of fruits & vegetables will be beneficial to their nutrition. • Cooking fruits and vegetables will change the nutritional value. • Different ways to prepare and cook fruits and vegetables. • Vocabulary: paring, fiber, boiling, simmering, roasting, sauteing, pan frying, grilling, mature, ripe, enzymatic browning,	• Identify a serving. • Select appropriate preparation tools based on the fruit & vegetables. Properly use chef and/or paring knife. • prepare fruits & vegetables using a variety of techniques. • Select fruits & vegetables based on their properties and what they will add to a dish.

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Unit 4: The Flavors of Fruits and Vegetables

Missouri Learning Standards

Demonstrate food safety and sanitation procedures (8.2).

Supporting Standards:

- Identify characteristics of major foodborne pathogens, their role in causing illness, foods involved in outbreaks, and methods of prevention (8.2.1).
- Practice standard personal hygiene and wellness procedures (8.2.5).
- Demonstrate safe food handling and preparation techniques that prevent cross contamination from potentially hazardous foods and food groups 8.2.7).

Demonstrate professional food preparation methods and techniques for all menu categories to produce a variety of food products that meet customer needs (8.5)

Supporting Standards:

- Demonstrate professional skills in safe handling of knives, tools, and equipment (8.5.1).
- Demonstrate knowledge of portion control and proper scaling and measurement techniques (8.5.3).

Apply risk management procedures to food safety, food testing, and sanitation (9.2)

Supporting Standards:

- Analyze factors that contribute to food borne illness (9.2.1)
- Use the Hazard Analysis Critical Control Point (HACCP) during all food handling processes (the flow of food) to minimize the risks of food borne illness (9.2.4).
- Demonstrate practices and procedures that assure personal and workplace health and hygiene (9.2.5).
- Demonstrate standard procedures for receiving, storage, and preparation of raw and prepared foods (9.2.6).

Demonstrate food science, dietetics, and nutrition management principles and practices (9.6).

Supporting Standards:

- Implement food preparation, production, and testing systems (9.6.2).
- preferences of diverse customer populations (9.6.5).

Demonstrate principles of food biology and chemistry (9.7).

Supporting Standards:

- Explain the process of ionization in the formation of acids and bases and effect on food and food products (9.7.3).
- Analyze the impact of food presentation methods and techniques on nutrient value, safety and sanitation, and consumer appeal of food and products (9.7.7).

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Unit 5: The Top Chef

This is the capstone experience in Foods I in which students engage as "top chefs" selecting their ingredients from the 5 food groups (grains, dairy, protein, fruit and vegetables), designing and implementing recipes, using appropriate tools and effective cooking techniques to create a quality meal.

Unit Essential Learning Targets	
<i>Enduring Understandings</i>	<i>Essential Questions</i>
- There are basic principles of preparation for grains, dairy, protein, fruits and vegetables. - All nutrients have a unique function and are reduced with some cooking methods. - The art of cooking requires skills and knowledge.	- What actions can a person take to be safe in the kitchen? - What are the basic principles of preparation for grains, dairy, protein, fruits and vegetables? - How can nutrients be preserved when preparing food?
<i>Students must know:</i>	<i>Students must be able to:</i>
- Dairy requires intentional cooking techniques. - The selection and use of the proper equipment when producing protein products. - Different ways to prepare and cook fruits and vegetables.	- Engage in an authentic cooking experience using a variety of ingredients (fruit, vegetable, grain, dairy, and protein*) in which they design and implement recipes to create a meal by selecting and using appropriate tools and cooking techniques to create quality food products. - Define a real world problem that they want to solve. - Research and design a solution to a real world problem. - Evaluate a solution based on meeting the needs of a real-world problem. - Demonstrate cooking methods that increase nutritional value, lower calorie and fat content, and utilize herbs and spices to enhance flavor. - Demonstrate cooking methods that increase nutritional value, lower calorie and fat content, and utilize herbs and spices to enhance flavor. - Demonstrate cooking methods that increase nutritional value, lower calorie and fat content, and utilize herbs and spices to enhance flavor.

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Unit 5: The Top Chef

Missouri Learning Standards

Demonstrate food safety and sanitation procedures (8.2).

Supporting Standards:

- Identify characteristics of major foodborne pathogens, their role in causing illness, foods involved in outbreaks, and methods of prevention (8.2.1).
- Practice standard personal hygiene and wellness procedures (8.2.5).
- Demonstrate safe food handling and preparation techniques that prevent cross contamination from potentially hazardous foods and food groups 8.2.7).

Demonstrate professional food preparation methods and techniques for all menu categories to produce a variety of food products that meet customer needs (8.5)

Supporting Standards:

- Demonstrate professional skills in safe handling of knives, tools, and equipment (8.5.1).
- Demonstrate knowledge of portion control and proper scaling and measurement techniques (8.5.3).

Apply risk management procedures to food safety, food testing, and sanitation (9.2)

Supporting Standards:

- Analyze factors that contribute to food borne illness (9.2.1)
- Use the Hazard Analysis Critical Control Point (HACCP) during all food handling processes (the flow of food) to minimize the risks of food borne illness (9.2.4).
- Demonstrate practices and procedures that assure personal and workplace health and hygiene (9.2.5).
- Demonstrate standard procedures for receiving, storage, and preparation of raw and prepared foods (9.2.6).

Apply basic concepts of nutrition and nutrition therapy in a variety of settings, considering social, geographical, cultural, and global influences (9.4)

Supporting Standards:

- Analyze nutritional needs of individuals (9.4.1).
- Design instruction on nutrition to promote wellness and disease prevention (9.4.5).

Demonstrate food science, dietetics, and nutrition management principles and practices (9.6).

Supporting Standards:

- Build menus to customer/ client preferences (9.6.1).
- Manage food production to meet needs and preferences of diverse customer populations (9.6.5).

Demonstrate principles of food biology and chemistry (9.7).

Supporting Standards:

- Explain the properties of elements, compounds, and mixtures in foods and food products (9.7.1).
- Relate the composition of lipids and proteins to their functions in foods and their impact on food preparation and nutrition (9.7.5).