**Course Description:**

Students will apply food-science principles to prepare and bake breads, desserts and pastries. They will also use specialized decorating and presentation techniques to decorate cakes, cookies, pastries, and other baked goods. Students will select quality ingredients, determine food costs, and research and develop marketable new recipes and food concepts. Personal safety, food safety, and equipment safety will be emphasized.

**Outcome 3.1. Pathogens, Illnesses and Diseases:** Identify pathogens that could render food unsafe for consumption without appropriate precautions and controls.

**Competencies:**

3.1.6. Identify the symptoms and consequences of allergic reactions and intolerances, and implement exposure-prevention strategies.

3.1.7. Identify sources of common allergens, and implement exposure prevention strategies.

*An “X” indicates that the pathway applies to the outcome.*

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**Outcome 3.2. Personal Safety and Sanitation:** Demonstrate strategies for preventing risks and biological and physical contamination through personal hygiene, proper attire and precautionary medical safeguards.

**Competencies:**

3.2.1. Identify personal actions and behaviors that contribute to contamination and cross-contamination of food, and describe ways to prevent those issues.

3.2.2. Identify when hand-washing must occur, and wash hands using the five-step technique.

3.2.3. Select, maintain, and use proper work attire and personal protective clothing and equipment appropriate to job tasks.

3.2.4. Handle situations involving bodily fluids.

3.2.5. Describe situations when food-handlers should be restricted or excluded from working with food or being in the operation.

3.2.6. Lift and move heavy materials and equipment following established ergonomic processes.

3.2.7. Explain how personal safety and sanitation contribute to an organization’s response to allergies and intolerances.

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**Outcome 3.3. Food Safety and Sanitation:** Demonstrate strategies for preventing and controlling biological, physical and chemical contamination of food products through proper food handling and sanitization procedures.

**Competencies:**

3.3.1. Describe food-safety guidelines (e.g., FDA Food Code), local health-code requirements and the consequences of failing to comply.

3.3.2. Describe the impact of Hazard Analysis and Critical Control Point (HAACP) food safety management system on food service.

3.3.3. Identify critical control points (Hazard Analysis and Critical Control Point [HAACP]).

3.3.4. Identify potential biological, chemical and physical hazards.

3.3.5. Identify potentially hazardous foods (PHF), Time and Temperature Control for Safety of Food (TCS) and foods in the temperature danger zone (TDZ).

3.3.6. Follow precautionary guidelines established to address food-safety issues for high-risk populations and to reduce potential exposure to harmful pathogens.

3.3.10. Mark, label, store, and dispose of food and food by-products (e.g., fats, oil, grease).

3.3.11. Identify warning signs indicating potential food safety issues during the receiving, storing and serving processes based on food type.

3.3.12. Take corrective actions to maintain food safety.

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**Outcome 3.4. Equipment Safety and Sanitation:** Demonstrate strategies and techniques for eliminating biological, physical and chemical contamination through proper equipment use, storage and maintenance.

**Competencies:**

3.4.1. Distinguish between cleaning, sterilizing and sanitizing.

3.4.2. Implement equipment safety requirements, and adhere to health and safety codes that restrict equipment use.

3.4.3. Set up, program, sanitize, and use commercial equipment and machines.

3.4.4. Break down and maintain commercial equipment and machines.

3.4.5. Calibrate temperature probes.

3.4.6. Inspect, use, sanitize, and store knives, hand tools and implements.

3.4.7. Clean, sanitize, and store tableware and equipment.

3.4.8. Adjust equipment and workstations to respond to allergies, food intolerances, and special requests.

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**Outcome 4.1. Culinary Industry Fundamentals:** Analyze the effects of sociological, cultural, historical and environmental developments on consumer food preferences and the resulting culinary issues and challenges.

**Competencies:**

4.1.1. Differentiate among the segments of the culinary and foodservice operations industry, and identify the types of food served by these segments.

4.1.3. Analyze food preparation and presentation trends.

4.1.5. Determine customer behavioral characteristics and factors that influence customer selection of food places and menu items.

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**Outcome 4.3. Ingredient Selection and Preparation:** Follow mise en place principles when organizing food and equipment, determine amounts to use, and prepare ingredients for use in recipes.

**Competencies:**

4.3.1. Explain the importance of product specifications and portion control.

4.3.2. Measure solids and liquids, and apply ratios and equations to scale, and convert U.S. and metric measurements.

4.3.3. Use and convert standardized recipes to achieve specific quantities and serving sizes.

4.3.4. Adjust recipes and preparation techniques to respond to dietary restrictions.

4.3.5. Select production methods (e.g., heat transfer, moist heat, dry heat) and equipment appropriate for the food product and environment.

4.3.6. Explain mise en place principles and their impact on kitchen operations.

4.3.7. Demonstrate mise en place principles in setting up work space.

4.3.8. Select tools and equipment that foster best results in food preparation.

4.3.9. Perform processing necessary to prepare ingredients for use in a recipe (e.g., clarify, seed, soak, steep, bread, batter, caramelize, reduce, emulsify).

4.3.10. Use standard knife and fabrication skills and techniques.

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**Outcome 4.4. Food Staples and Sides Preparation:** Apply cooking principles and methods, cultural and ethnic knowledge and nutrition-management strategies to prepare and pair staples and sides.

**Competencies:**

4.4.1. Use quality factors to select food products and produce.

4.4.2. Identify seasonings, oils, flavor enhancers and food additives by type, class and purpose.

4.4.5. Prepare egg-based dishes.

4.4.7. Use dairy products in food dishes.

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**Outcome 4.6. Food Presentation:** Apply plating and presentation principles to deliver attractive and balanced menu items.

**Competencies:**

4.6.1. Plate food using design principles of color, height, focal point, proportion and temperature.

4.6.2. Prepare platter and buffet presentations.

4.6.3. Garnish plates, soups and desserts.

4.6.4. Maintain nutritional value and dietary restrictions during the plating and presentation process.

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**Outcome 5.1. Baking and Pastry Science:** Analyze the scientific principles that determine baking techniques required to achieve a desired outcome.

**Competencies:**

5.1.1. Explain the chemical reactions occurring during kneading, mixing and creaming.

5.1.2. Describe the consequences of under- and over-manipulation.

5.1.3. Explain considerations in using active, active-dry and instant yeast.

5.1.4. Proof yeast, and monitor and adjust environmental conditions to maximize yeast fermentation.

5.1.5. Describe how the composition of baking ingredients and temperature affect the chemical structure of the end product.

5.1.6. Analyze the effect of ingredient substitutions on chemical reactions and baking outcomes.

5.1.7. Analyze how the use of different smallwares, hand tools and equipment affects the types of chemical reactions that occur during the baking process.

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**Outcome 5.2. Baking and Pastry Techniques:** Select tools and apply procedures and techniques to bake a variety of desserts and baked goods.

**Competencies:**

5.2.1. Select ingredients for use in cakes, confections and pastries.

5.2.2. Prepare and bake cookies to achieve the desired flavor, texture and shape.

5.2.3. Prepare, bake and fill pie crusts, tarts and pastries.

5.2.4. Prepare, bake and assemble cakes and tortes.

5.2.5. Prepare custards, puddings, gelatins, mousses and soufflés.

5.2.6. Prepare syrups, creams and sauces.

5.2.7. Prepare frozen desserts.

5.2.8. Prepare fruit desserts.

5.2.9. Temper chocolate and coatings.

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**Outcome 5.3. Breads:** Apply baking production techniques to prepare a variety of breads.

**Competencies:**

5.3.1. Select ingredients for use in breads.

5.3.2. Prepare and bake quick-bread doughs and batters (e.g., biscuits, muffins, fritters, crepes, pâté à choux).

5.3.3. Prepare, shape, proof, and bake yeast-leavened dough.

5.3.4. Prepare artisan and specialty breads, sourdoughs, bagels, pretzels, holiday or seasonal breads and flat breads.

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**Outcome 5.4. Specialized Decorating and Presentation:** Apply specialized decorating techniques to service special events and requests.

**Competencies:**

5.4.1. Explain concepts that affect the presentation of baked goods and pastries (e.g., figure, ground, line, contrast, pattern, proportion, color, symmetry, movement, unity, balance).

5.4.2. Prepare washes and glazes, icings, frostings, whipped toppings and fillings.

5.4.3. Model chocolate for decorative purposes.

5.4.4. Demonstrate bagging and piping techniques.

5.4.5. Prepare and apply base, crumb, marzipan and fondant cake coatings.

5.4.6. Prepare and apply edible decorations.

5.4.7. Decorate cakes and cookies according to themes and designs.

5.4.8. Maintain freshness and quality of baked goods, pastries and desserts in ready state to be served at a later time.

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**Outcome 6.1. Food Science:** Apply principles of biology, chemistry and physics to determine the nutritional values and health impacts of food products.

**Competencies:**

6.1.2. Describe how food responds to temperature.

6.1.9. Describe the structure of molds, bacteria, viruses, prions and yeast; how they reproduce; the factors that affect their growth and their roles in food production.

6.1.12. Explain the chemical nature, required elements and nutritional implications of fermentation, gel formation, dextrinization and retro gradation processes.

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**Outcome 6.3. Research for Recipe Development:** Apply principles of food composition and chemistry, nutrition science and innovation processes to research and develop marketable new recipes.

**Competencies:**

6.3.1. Conduct a sensory evaluation of the food product.

6.3.2. Explain how product availability, cost, product quality, nutrition science, allergies and intolerances affect the food innovation process.

6.3.3. Analyze trends to identify opportunities for food innovation.

6.3.4. Determine the nutritional value of food products.

6.3.5. Develop new food concepts.

6.3.6. Evaluate operational considerations, and recommend new food recipes.

6.3.7. Conduct test market.

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**Outcome 7.1. Purchasing and Inventory Management:** Plan and implement procedures and techniques to maintain food and beverage safety and quality, reduce costs and achieve organizational objectives during inventory acquisition, storage and use.

**Competencies:**

7.1.1. Determine how food and beverage purchasing decisions are influenced by food defense, security and supplier’s agricultural and manufacturing practices.

7.1.2. Conduct make or buy analysis, and determine course of action.

7.1.3. Establish food specifications and prep lists.

7.1.4. Calculate unit costs, total costs and yield measures for standard recipes.

7.1.6. Develop ingredient and portion control guides.

7.1.8. Apply first-in first-out (FIFO) inventory control method to store and use food products.

7.1.9. Identify sustainability considerations in purchasing food and nonfood products.

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**Outcome 7.2. Kitchen Management and Distribution:** Design, implement, and manage distribution processes to achieve quality standards, expedite workflow and sustain customer satisfaction at a reasonable cost, using continuous-improvement techniques.

**Competencies:**

7.2.4. Select packaging, and prepare food product for distribution.

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