Baking Food Safety Lesson
For Home, Classrooms, Community or Out-of-School Programs
Prepared by Sharon Davis, Family & Consumer Sciences Education, HomeBaking.org

Leader Objectives: Guide participants to
- Define recipe’s raw ingredients
- Identify risks if raw ingredients/batter eaten
- List best baking food safety practices (Checklist)
- Insert food safety steps in the Mug Muffin recipe.
- Identify on temperature chart the target internal muffin doneness temperature
- Cool, handle and eat or package baked goods away from raw flour, eggs, batter or dough

Lesson Steps: Focus on baking food safety.
Step 1. View Did You Know flour safety video.
Critical Thinking Q: Grain is cleaned thoroughly on the farm, and in the mill. What’s the difference between raw, clean, and baked? (A: Clean is still raw and can carry harmful bacteria. Temperatures that kill bacteria aren’t yet reached until flour is fully baked.)

Step 2. Read the Blueberry Mug Muffin recipe.
Serves 2. Source: landolakes.com/recipe/
Ingredients
2 Tablespoons (1 oz/28g) butter
1/4 cup (1 oz/28g) all-purpose flour (may be half whole wheat flour)
2 Tablespoons (0.8 oz/24g) brown sugar
1/2 teaspoon each baking powder and ground cinnamon
1/4 teaspoon ground nutmeg
1 large egg yolk (1/2 oz/14g) – discard white
1 Tablespoon (0.5 oz/14g) milk
1 teaspoon vanilla
1 Tablespoon blueberries (fresh, frozen or dried)
Instructions
1: In small bowl or cup use fork to blend dry ingredients. Place butter into large (12 oz. or larger) coffee mug. Microwave until butter is melted, about 30 seconds. Add blended dry ingredients, yolk, milk and vanilla. Mix well with fork. Add blueberries, stirring just until distributed.
2: Microwave 60-90 seconds or until muffin pulls away from sides and top is dry. Take temperature at center (Temperature will rise at least 5° F. as it stands.) Use chart to determine target internal temperature. Do not over cook. Cool slightly.
3: Optional: Drizzle with 2 Tablespoons powdered sugar mixed with 1/2 teaspoon lemon juice or water. Serves 1-2.

Nutrients: One serving, 570 calories, 28mg fat, 245 mg sodium, 71g carbohydrates, 2 g dietary fiber, 7 g protein

Step 3. Prepare Mug Muffin recipe. Have bakers prepare Blueberry Mug Muffin. Critical Thinking Q: What food safety steps did you use? (A: 1) At start: wash hands, counters; again after mixing and before handling or eating muffin (2) returned eggs, flour or other perishable ingredients to storage; (3) tested for doneness at center (photo right)- Is 203°F at center done and food safe? (See Chart on Baking Food Safety 101)

Lesson supply list:
- Sink, aprons, hair ties
- Microwave oven(s)
- Microwaveable straight-sided 14 oz mugs*–One per team or recipe
- Mug Muffin Ingredients for each lab team
- Food thermometers
- Toothpicks
- Fork for stirring
- Spoons (for sampling)
- Napkins
- Copy Baking Food Safety 101 one per person; pencil or pen

*Control mug size and shape or compare variable size results.

Chillicothe, Missouri High School

Baking student ‘temps’ mug muffin at 203°F.
https://www.thermoworks.com/home-baking-association

Consumer and Family Resources, 2.1.3—Analyze decisions made for providing safe and nutritious foods for individuals and families.
Family and Human Services, 7.4.1—Investigate health, wellness, and safety issues of individual and families
Food Production and Services, 8.2.1—Demonstrate food safety and sanitation procedures.
Nutrition and Wellness, 14.4—Evaluate factors that affect food safety from production to consumption.