

# Food Science Squash Blossoms —



9-12 / Food Science: Squash Blossoms

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Overview: This lesson will challenge students to use various food preparation methods to create the maillard reaction.

(Time Needed: 2 class periods.)

Standards:

FCS-FS-4. Students will discuss how energy works in food preparation and preservation.

- Explain how heat is transferred in the cooking, baking, and thermal preservation processes and demonstrate the methods of boiling, roasting, and microwaving.
- Compare the effect of various temperatures on rates of chemical and physical reactions.

Objectives:

- Students will understand how various cooking methods work, ie. convection, conduction.
- Students will evaluate which method they prefer for squash blossoms.
- Students will discuss how this is a beneficial secondary crop for farmers.

Materials:

- Squash blossoms (male) from school garden or farmer's market.
- Maillard reaction video - <https://www.youtube.com/watch?v=NtwwjRYNw9c>
- Great article about cooking squash blossoms - <https://www.thekitchn.com/five-ways-to-eat-squash-blossoms-87564>
- Lab sheets (See below.)
- Lab rubric (See below.)
- Recipes:
  - Baked - <http://www.katherinemartinelli.com/blog/2012/baked-stuffed-squash-blossoms/>
  - Fried - <https://www.epicurious.com/recipes/food/views/squash-blossoms-stuffed-with-ricotta-354966> (only the blossoms, not the sauce.)

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## Outline:

- Engage: Students will learn the maillard reaction and its importance in food preparation.
- Explore: Students will explore different cooking methods.
- Explain: Teacher will explain how conduction and convection work.
- Extend: Students can examine the difference in cooking methods and taste.

## Lesson Plan:

- Engage: Students can go out to the school garden to harvest male flowers. If blossoms were purchased, begin by exploring the blossoms and brainstorm what the students think they will taste like. How would they imagine cooking them?
- Explore: Have students watch the maillard reaction video. Have them describe the foods they have eaten that are golden brown and delicious (GBD) and why they are so good. Have them explore two recipes and decide where golden brown color comes from.
- Explain: Teacher will explain how different cooking methods work, ie. conduction, convection. Teacher will then break students into lab groups and assign groups one cooking method for the squash blossoms.
- Extend: Students will complete the lab duty sheets and be checked by teacher for proper attire. Students will prepare mise en place and prepare recipe. Students will document final product with a picture and taste recipe. Baked group will share their samples with the fried group and vice versa.
- Evaluate: Students will vote on which recipe they liked better and make suggestions on cooking methods and their effectiveness in creating a golden brown exterior. Teacher will evaluate the lab groups using the rubric attached.

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## Dishwasher: Nutrition Facts Sheet

Dishwasher \_\_\_\_\_ Group # \_\_\_\_\_ Recipe \_\_\_\_\_

Step 1: Take a look at the recipe and locate all of the healthy foods (vegetables, fruits, meats, whole grains, etc.)

Step 2: List those foods below and list the nutrients and benefits of each food.

<u>Ingredient</u>	<u>Nutrients and Health Benefits</u>
EXAMPLE: Green Bell Peppers	Good source of fiber, vitamin c, vitamin E Reduces risk of heart disease and diabetes Supports a strong immune system

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## Executive Chef: Lab Work Schedule

EXECUTIVE CHEF \_\_\_\_\_ Group # \_\_\_\_\_ Recipe \_\_\_\_\_

Time	Task to be completed:	Completed by:
	<b>Preliminary Duties: (wash hands, hair tied back, etc.)</b>	

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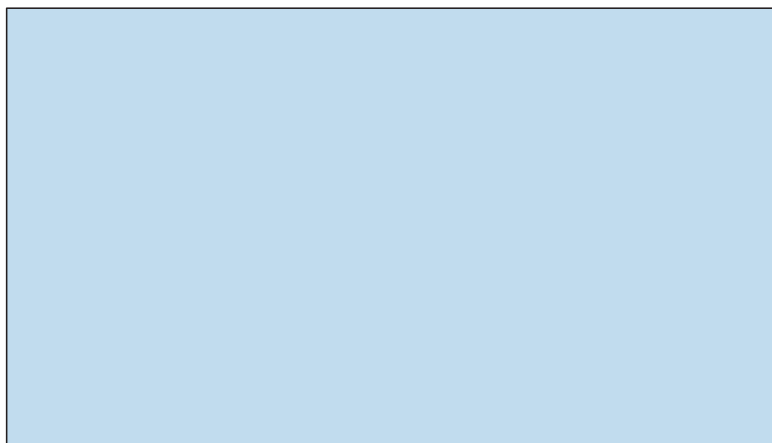
## Prep Cook: Planning Sheet

Prep Cook \_\_\_\_\_ Group # \_\_\_\_\_ Recipe \_\_\_\_\_

**Step 1: List all of the ingredients and the amounts of each that you need to collect from the *supply table* in order to complete this recipe.**

Ingredient	Amount Needed

**Step 2: Draw the measuring equipment and other items you need on the tray that you will take to the supply table.**



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## Sous Chef: Lab Sheet

Sous Chef \_\_\_\_\_ Group # \_\_\_\_\_ Recipe \_\_\_\_\_

### “Mise en Place”

**Step 1: List all of the equipment that your group will need to prepare this recipe *except measuring tools*. (The prep cook will assemble the measuring tools.) This includes small equipment, utensils, parchment paper and small electrical appliances. You do not need to include the range or oven.**

Kitchen Equipment and Appliances
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

**Step 2: Draw how you will set up the countertop for the executive chef.**

A large, empty rectangular box with a light blue background, intended for drawing the countertop setup for the executive chef.

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## Culinary Lab Rubric

**Group Members** \_\_\_\_\_

**Kitchen** \_\_\_\_\_ **Recipe** \_\_\_\_\_ **Date** \_\_\_\_\_

The **executive chef** will complete an evaluation of the lab before returning the lab folder to the teacher.

Criteria	Weight	Executive Chef Evaluation				Teacher Evaluation
		needs improvement	beginner	proficient	advanced	
<b>Lab Plans</b> Executive Chef Sous Chef Prep Cook Wait Staff	20%	Students do not complete lab plan	Students do not include all required elements	Lab plan includes most required elements.	Lab plan is accurate and includes all required elements	
<b>Safety</b> All safety rules are followed	20%	There are multiple or deliberate violations of safety procedures.	Students have several safety violations.	Students follow safety procedures, errors are minor	Students follow all safety procedures.	
<b>Sanitation</b> Personal Hygiene Proper food-handling techniques Proper cleaning techniques	20%	There are multiple or critical violations of sanitation procedures.	Students have several sanitation violations.	Students follow sanitation procedures, errors are minor	Students follow all sanitation procedures.	
<b>Assembly of Ingredients</b> Correct measuring tools Correct measuring techniques Clean supply table	5%	There are multiple errors in measuring techniques or more than two trips are made to the supply table and the supply table is left messy.	There are two or more errors in measuring or sous chef makes more than one trip to the supply table.	There is only 1 error in measuring technique or tools.	Tray is organized so that only one trip to the supply table is necessary. Ingredients are measured accurately and supply table is left clean.	
<b>Kitchen Competence</b> "Mise en Place" Correct equipment for task Correct technique	20%	Students are very disorganized and do not complete lab in allotted time. Several mistakes made in technique or equipment use. Students are distracting to others and/or outside appropriate work area.	Students are disorganized and/or make several mistakes in following the recipe. Students do not work quietly in their own lab station.	There is only one error in organization, following the recipe or use of equipment	Students worked quietly and efficiently in their own lab station, following the recipe accurately and using correct tools and techniques.	
<b>Cooperation</b>	10%	Students do not work well together. Some members do not do their share of the work. Some members quit before all work is completed.	Students do not work well together.	Students work well with all members of the group. Students complete all tasks assigned on the lab plan.	Students work well with all members of the group. Students complete all tasks assigned on the lab plan and help others if needed.	
<b>Finished Product Presentation</b>	5%	Finished product is unacceptable due to recklessness of students or table is set incorrectly.	Finished product is unacceptable due to honest mistakes of students.	Finished product is acceptable and table is set correctly.	Finished product is of high quality and table is set correctly.	
<b>Points Awarded</b>						

### Individual Deductions

<b>Name:</b> <b>Reason for deduction:</b>	<b>Name:</b> <b>Reason for deduction:</b>
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