

Cooking Up Success



WORCESTER TECHNICAL HIGH SCHOOL CULINARY & PASTRY ARTS PROGRAM

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CULINARY SCIENCE - MOLECULAR GASTRONOMY & MODERN COOKERY / STEM CAMP SUMMER 2021

Exploring transformations from one molecular state to another through processes from food science and molecular gastronomy, students will learn how chemical interactions are used to change the textures and perceptions of edible liquids. The lab will illustrate chemical principles in a hands-on experiment that has connections to real-world applications. Spherification and powdering fats are two techniques of molecular gastronomists used to deconstruct and alter foods for a new eating experience. Creating a powder out of liquid is also used in the processed food industry to capture flavors in a dry form. But beyond that, these two processes involve chemical interactions that students learn about and can then see firsthand. It could mean making clear pea ravioli, edible lipstick, smoky ice cream or chocolate caviar — new food concepts that come from molecular gastronomy, a practice that puts a microscope over the cooking process. For chefs, this scientific approach to food means complete control over any recipe and consistent results with a creative component. For kids, molecular cooking is a chance to discover creative cooking early in life, to explore new foods and complement lessons from the classroom. By basic definition, molecular gastronomy is the subdiscipline of food science that looks at chemical and physical changes of individual ingredients, it's about deconstructing food to its most basic elements to restructure them into something less familiar.

SAFETY REQUIREMENTS:

Students will all have to wear closed toe non-skid shoes & a lab/chef coat (to be provided by the camp)

No – Shorts or Skirts allowed in the lab area, no jewelry or false/ painted fingernails, Hair must be pulled back and under a hat.

MATERIALS (provided for each student)

- Chef/ Lab coat with student's name and camp logo
- Skull Cap & Apron
- Digital Thermometer
- Cuisine R-Evolution Deluxe Molécule Gastronomy Kit (\$125 value)
- Cheese making Supplies
- Camp Notebook with Recipes & Lab Procedures

COURSE OUTLINE:

Day 1

The Beginning:

Students will start the camp with a quick tour of the lab, review of safety requirements and an overview of the recipes and labs for the week. We will learn about the chemical compounds that we will be using to include but not limited to: Agar-Agar, Sodium Alginate, Calcium Lactate, Soy Lecithin, Xanthan Gum, Sodium Citrate, Tapioca Starch, Albumin Powder, & Whey Protein Isolate. Student's will unpack their kits and learn how to use the tools and ingredients in their kits. We will then make: A Modern Ultra Frothy Milk Shake & Instant Chocolate Sponge Cake with the help of modern science.

Day 2

Spherification & Introduction to Sous-vide cooking:

Students will begin today with an introduction to Spherification using the following food additives, Calcium Lactate & Sodium Alginate. Students will construct *a reimagined Greek salad, Balsamic caviar and Sous-vide cooked chicken breast Infused with herbs.*

Day 3

Biochemistry of Milk - Cheese Making 101

Students will learn Complex Nature of Milk; What Acid does to Milk and what Enzymes are and the role they play in the making of cheese. Students will make *Fresh Mozzarella Cheese from whole milk* using a few simple ingredients. Students will then make a *Homemade gourmet version of Macaroni & Cheese using Sodium Citrate* to break down the enzymes in aged white cheddar to create a “Velveeta” like texture along with a sharp tangy flavor. Students will have a “Culinary challenge & Tasting” to see who can create the best gourmet Macaroni & Cheese.

Day 4

Emulsification & Gelification

Students will start the lab today with making an *Encapsulated Daiquiri* using both Spherification & Emulsification. Then we will move to a *Fizzy Ravioli* using Gelification & Popping Sugar. Today's lab will transition into Students making *Pistachio Gelato & Smoky Ice Cream* using a Smoking gun and Science to create a unique “frozen treat” involving Bubble gum and spun sugar to create modern plated desserts that will have your tastebuds and mind playing tricks on each other.

Day 5

As we end the week of Food Science, we will review all the recipes and formulas learned. Students will reproduce some of the foods that we learned to make this past week to share with other students & Teachers in the STEM CAMP. This Culinary adventure will end in a small banquet of treats. Students will take with them their kits and uniforms so they can continue their Culinary Science Labs at home.

Recipes that will be made in camp

- Modern Ultra Frothy Milk Shake
- Instant Chocolate Sponge Cake
- Reimagined Greek salad
- Balsamic Caviar
- Sous-vide cooked chicken breast Infused with Herbs
- Fresh Mozzarella Cheese from whole milk
- Gourmet version of Macaroni & Cheese using Sodium Citrate
- Encapsulated Daiquiri
- Fizzy Ravioli
- Pistachio Gelato & Smoky Ice Cream