

SCIENCEBLAST

Monday, May 16, 2022 at Williams College

Sponsored by the Williams Center at Mt. Greylock and the Williams College Science Center

Science is more than just knowledge; it is a way to explore the world. Science is about innovation, creativity and ingenuity to find answers to new problems. The mission of ScienceBlast is to expose 10th grade students to the college-level sciences and lab facilities while inspiring them to explore a range of scientific fields as they think about their science options in college.

Science Workshops

*All workshops are offered during both sessions and will be capped at fifteen students.
Session descriptions are on the second page.*

Rank your session choices online at the following website:

<https://learning-in-action.williams.edu/local-education-outreach/science-blast-mount-greylock/>

**Science of Taste
Underwater Avalanches
Why Knot?
Physics of Chocolate
Eau d'coli**

Schedule of Events

| | |
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| 8:30-8:40 | Opening Remarks (Thompson Physics Lab –TPL 203) |
| 8:45-9:45 | Science Workshop, Session 1 (locations TBD) |
| 9:45-10:00 | Snack break on the Science Quad (Eco Café, rain location) |
| 10:05-11:05 | Science Workshop, Session 2 (locations TBD) |
| 11:05-11:15 | Wrap-up and questions (Thompson Physics Lab –TPL 203) |
| 11:15 | Depart Williams for Mt Greylock |

If you have any questions, please contact Kaatje White (kwhite@williams.edu)

SCIENCE WORKSHOP DESCRIPTIONS

Science of Taste

Matt Carter (Biology)

How does the tongue sense and perceive taste? In this hands-on workshop, we will taste a variety of foods and describe what is occurring on the tongue at a biological and chemical level. We will also explore how the sense of smell contributes to the flavor of food, as well as the other factors that contribute to our enjoyment of food. Finally, we will have fun with some “gastronomical illusions,” in which the brain is fooled into thinking it tastes something different from what is present on the tongue.

Underwater Avalanches

Rónadh Cox (Geosciences)

Miles below the sea surface, hundreds or even thousands of miles from any beaches or streams, we find sheets of sand, pebbles, and even boulders. Rivers and waves can move these kinds of materials on land and in shallow water, but those processes don't affect the dark depths of the ocean. These sediments are carried by turbidity currents: underwater avalanches made up of thick slurries of sand and mud. Turbidity currents travel for hundreds of miles, at very high velocity, and can snap submarine cables that carry telecommunications across oceans, slowing or stopping data traffic between countries. We will look at the forces that drive and control these currents, propelling them long distances along the sea floor, and will investigate them with experiments using water, sand, and mud.

Why Knot?

Colin Adams (Mathematics)

Knots have appeared everywhere from art, literature, and religion to seafaring. We will discuss their past history as well as their future, with emphasis on the role they play in mathematics and the applications of that role to DNA and synthetic chemistry. This will be a hands-on workshop with all audience members getting an opportunity to try their hand at making knots out of string and out of people.

The Physics of Chocolate

Graham Giovanetti (Physics)

Most of us have some familiarity with the phases of matter—and the transformations between them—in the context of water, which boils to create steam or freezes to form ice. But you might not know that the phases of many everyday materials have been carefully engineered to be stronger, tougher, or otherwise more useful. This includes glass, steel, plastics...and chocolate! It turns out that there are at least six different solid phases of chocolate, but only one of them is the hard, glossy form that we like to eat. In this hands-on activity, we'll explore how to control phase transformations and then apply what we've learned to "temper" chocolate, making delicious treats to eat.

Eau d'coli

Bacteria stink. In fact, the reason your farts stink (and yes, yours do too) is because the bacteria living in your gut produce foul-smelling molecules. Since we can't get rid of these bacteria (a topic for a different workshop), the next best thing might be to engineer bacteria to smell better. Perhaps like roses or mint or even...bananas! In this hands-on workshop, you'll get the chance to "stop and smell the banana-scented *E. coli*," and learn about other, more traditional methods for detecting bacteria.