

## Student Workshops

**All That Glitters:** We all want to shine inside and out. Have you ever wondered what makes your makeup shine? Chances are that shimmer is created by a mineral. Come find out which minerals make your lip gloss shine, discover where they come from, and then make your own.

**Brain Tricks:** Have you ever wondered how your brain processes information? Come join us to participate in some puzzling demonstrations and see how psychologists investigate these phenomena.

**Build A Wind Turbine!:** Have you ever wondered how we can use the power of the wind to produce electricity? Come join us to build your own wind turbine and see which team's turbine can produce the most energy.

**Chemistry In The House:** Chemistry is a science that is used basically everywhere in things all around us. We will learn about products that you handle on a regular basis and how chemistry is associated with them. Come explore the makeup of household items and perform some safe and fun experiments that you can also do at home.

**Cutting With Code:** Every sticker has a story from the one you got in a card from a friend you hadn't seen for months to the one from that restaurant you went to last summer on family vacation. In this workshop, you will draw a design on paper and then program a vinyl cutter to cut the design into a real sticker.

**Fast Friends:** In this workshop, you will play games to get to know other students. Come join us to discover the science of becoming fast friends with someone.

**Fractal Art With Python:** In this workshop, you will use a computer to draw digital fractal art! Absolutely no prior experience in programming is necessary – you will be taking existing code and running and changing it. You will be able to see how computers can automate tasks and how that ability can also be used to express yourself creatively. Along the way you will also learn a bit of Python, an extremely popular modern programming language!

**Go Hunt Wifi:** Have you ever wondered what makes it possible for you to watch your favorite show or to play your favorite game on your Kindle, Kindle Fire, iPad or Android Tablet? In this workshop, we will have fun learning about a device that is in almost every home today - the WiFi Router. Come join us on a WiFi scavenger hunt and discover that these routers are everywhere!

**Let's Make A Deal:** In the famous Monty Hall problem a contestant chooses from three doors, one of which has a prize. After the contestant makes their initial choice, the host opens one of the other losing doors and then gives the contestant the option of switching to the other closed door. Should they switch? We will play the game for candy prizes, discuss the history, and determine the best strategy to maximize the odds of winning.

**Living On The Edge: Life On A Sinking Island:** Come learn about life on one of the only remaining inhabited islands in the Chesapeake Bay. We will hear their stories and experience life working on the water. We will investigate the current issues that threaten them, then each group will create and present a Public Service Announcement (PSA) to teach others about how they can help this community thrive.

**Making Sense Of Your Senses:** How do our senses work to help us experience the world and respond to the different cues around us? Join us in this workshop to learn how you see colors, how can you hear a far away sound, why some people are extra good at gymnastics and more.

**Marooned - Engineering A Solution To Get Home:** Do you want to learn more about engineering? The world is facing a lot of challenges, but engineering design gives us a way to better understand and start tackling problems. Join us in a design challenge that requires collaboration and prototyping of creative solutions to figure out a way home after being stranded on an island. Come explore different fields of engineering while learning the engineering design process.

**Not So Sweet Odds:** What is more likely to cause diabetes? Eating lots of sugar or lack of activity? Could it be a combination of the two or something else entirely? In this workshop, you will become an investigative statistician to discover how the combination of different lifestyle choices can influence the odds of developing Type II diabetes. Join us as we run a simulation using M&Ms and find out if you can beat the odds.

**Operation Statistics:** Which surgery tool is better? Does it matter who the surgeon is? Is one tool better for one type of operation but not the other? Come play the game Operation! We will use statistics to examine whether a store-bought tweezer is better than the one provided with the game while learning about collecting and analyzing data.

**Programming With Finch Robots:** Want to stay one step ahead of our robot overlords? Start practicing with adorable Finch robots! In this workshop, we will learn to write Python code to make our Finch robots dance, avoid obstacles, sing, and react to light. Come see why Python is the most popular language for teaching introductory computer science at top-ranked universities. No prior experience is necessary - anyone can learn!

**Robot Geometry:** Could a robot help you with your math homework? Come join us to learn some easy programming and use Edison robots to draw simple geometric shapes.

**The Dating Game:** Have you ever wondered how scientists determine how old rocks are? Come join us to use M&Ms to simulate how atoms radioactively decay and learn how this is used to date rocks.

**We Like To Move It Move It:** Why have barefoot running and minimalist shoes become so popular? Come join us to discover the field of biomechanics! We will use a pressure platform, an app, and make our own videos to measure foot pressure, whole-body acceleration, and joint movements while running and walking.

**What Doesn't Kill You Makes You Stronger:** Have you ever heard of fish-hunting snails? How in the world could such slow creatures ever catch such a fast-moving prey? Cone snails use poisonous venom to capture fish, with each species of cone snail making its own deadly concoction. This venom could lead to new life-saving medicines, but we first need a better understanding of the evolution of the cone snail family. In this workshop, we'll learn about this fascinating group of predatory marine animals and use their beautifully decorated shells to build our own family tree of cone snail species.

**Your Heartbeat...It's Electric!:** Come be a physiologist for the day and study the fascinating subject of you, specifically your heart! We will look at the anatomy (structure) of the heart and how it pumps blood. We'll talk about the electrical system that makes your heart beat and see what this looks like on an electrocardiogram (EKG), a tool doctors use in the hospital to determine patient heart health.