

## **High School**

### **No Experience Needed Coding**

Looking for all students who are interested in computer programming or playing with Robots but have little to no experience. Learn how to program the Sphero Robot and challenge yourself to guide the Sphero through 5 challenging courses/obstacles.

### **Going Global**

Explore the concept of normal from a global statistics perspective. How much food is normal? How much education is normal? How might we work towards a new global definition of normal? We will explore statistics and challenge viewpoints as we grapple with the issues of global poverty and education. This is not a math course, but we will use math to explore the fairness of the world around us.

### **Breakout the Puzzles**

Love puzzles? Here is your chance to complete and create Breakout Box puzzles, mini-escape rooms that will challenge you to collaborate and think “outside of the box” in order to unlock the box. Participants will create physical and digital lock-box puzzles that they can play even after camp ends.

### **Krypto Kraze**

Have you ever wondered how to create a secret code for a message so it is easy to decode but difficult to crack? This course will familiarize students with commonly used cryptography terms, guide students through encoding and decoding messages as well as introduce various encryption techniques such as Caesar cipher and public key encryption. Students will use mathematics with matrices to decode messages. Students will also be able to develop their own secret codes and have their fellow classmates try to crack the codes using mathematics. This course will also discuss the history of coding in various themes. By the end of this course, students will gain better reasoning and problem solving abilities. Students will be able to reason and use logic at higher levels and gain a greater conceptual understanding of mathematics.

### **Fractal Frenzy**

The participants will enjoy exploring and making various fractal structures in nature and how to identify them. They will construct geometrical and random fractal structures via art work and computer codes. We will explore number patterns that emerge from Sierpinski's triangle, the Jurassic Park fractal, the Koch snowflake and others. We will also explore number chaos theory and how it applies to fractals.

## **An Exploration of Photography**

This class will explore a variety of photographic techniques ranging from alternative process photography, to the current use of digital techniques, and also basic photo editing. Students will have an opportunity to develop photographic works in multiple mediums as well as gain an understanding for the photographic process.

## **Positively Medieval: The Return**

Back by popular demand is the original Positively Medieval class which allows students to make paper from rags, dye wool with natural dyes, and live through a siege by making catapults and crossbows! As an added attraction, students will also be grinding pigments to make paints and learning about medieval rope making.

## **I'm With the Band**

*"A course for absolute beginners who want to rock, roll or hip hop." Ms. Barham*  
*\*If you play a traditional band/orchestra instrument but have never played guitar, bass, drums or keyboards in a contemporary setting, you may take this course. You are encouraged to bring any traditional band/orchestra instrument to camp.*

Ever want to play in a modern band? Students will learn the basics of guitar, bass, keyboards, bass and vocals in this fun and creative setting. Genres include rock, pop, hip hop, rhythm and blues, etc. If you already play a traditional band or orchestra instrument, bring it! Today's artists are incorporating a wide variety of instruments. With the aid of technology, we can do in a few days what once took weeks or months to accomplish. Class activities include learning contemporary songs, writing songs, recording and performing. Have fun forming groups, naming them, and creating music!

Materials provided by MSMS: Instruments, iPad®, song charts

\*Students should bring any wind or string instrument they currently play. You will not be made to play it; however, it would be great to have on hand if you choose to play it.

## **Engineering and Teamwork**

Discover the engineering process and foster your team work skills through hands-on activities. Students will work with new partners each day to create cargo containers, a mountainous road, a payload mover, and bore through Mount MSMS.

## **Junkyard Wars**

Use simple, (mostly) recycled or reused materials to meet design challenges from simple rockets to Rube Goldberg machines. You will work in teams to solve each challenge.

## **Magic in Chemistry in Harry Potter's World**

In this course, students will enter the world magic (via the Hogwarts School) to uncover chemical concepts and principles while exploring and understanding the “magic” of science. Students will participate in inquiry-based activities for hands-on discovery of basic principles of chemistry and the relevance of these principles to daily life in the world of Muggles.

## **Mystery of Forensic Science**

Have you ever wondered how evidence is collected to help bring criminals to justice? Does learning about different techniques and skills used by forensic scientists and crime scene investigators sound interesting to you? Join us as we perform ink chromatography, gel electrophoresis and forensic entomology to solve a few cases of our own!

## **Robotics**

Robotics is the fusion of Computer Science and Engineering, and in our camp, we will give students the opportunity to experience both. The Robotics course will teach students the basics of computer programming logic while letting them build their own interactive fields and games.