2018 MSMS High School Summer Camp Courses

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." Participants will leave with materials for their own Breakout Box.

CAD FOR 3-D PRINTING

Have you ever had an idea for something but did not know where to start to create it? Learn how to start with an idea and transform that idea into a real life object through the use of 3D printing and CAD (Computer Aided Design).

CHANGE YOUR THOUGHTS, IMPROVE YOUR LIFE

In a world where our value is measured in "likes", followers, and retweets, it is important to understand the science behind social inclusion and our ability to cope with stress. Today, many view the news as the ultimate reality TV show and we will discuss how our thoughts and how we define our surroundings have a direct impact on our actions. Additionally, we will address the myth that stress is 100% negative and how to use less than favorable situations to benefit us.

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.

Day 1: Students will build an index card tower and bore through Mount MSMS. Activities are designed to encourage teamwork and work on communication skills.

Day 2: Students will work together to create a balloon powered car.

Day 3: Students will work together to create a cargo container.

Day 4: Students will work together to create a mountainous road.

Day 5: Activities with parents.

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 fractal

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.

I'M WITH THE BAND!

A course for absolute beginners who want to rock, roll or hip hop.

Prerequisites: None

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.

I'M WITH THE BAND, TWO!

A course for students who have done a little rocking, rolling or hip hopping.

Prerequisites: Able to play basic chords, rhythms and/or vocal experience. Experience composing lyrics or music a plus but not required. Students who play an instrument other than drums and keyboards should bring their instrument to camp.

If you play a traditional band/orchestra instrument and also have some experience playing guitar, bass, drums or keyboards in a contemporary setting, you may take this course.

In this course, students will form bands within the class based on interest and experience. Genres include rock, pop, hip hop, rhythm and blues, etc. Bands will then learn, compose, record and perform! If you currently play a traditional band or orchestra instrument, bring it! Today's artists are performing and recording with 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

*Student should bring guitar, bass or any other wind/string instrument they currently play.

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.

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.

MUSIC, MATH, AND SCIENCE

Prerequisites: None

Counting, patterns, rhythms, fractions, volume, mass and numbers are common to science, mathematics and music. In this course, students will find connections between these subjects through fun and interactive activities. They will participate in dynamic projects that illustrate how math, science and music are linked. Using science and math, students will build instruments from found objects, learn songs, and perform them on the instruments they create! In the culminating activity, students will use critical thinking skills to "mash up" their songs with rhythm tracks and record them songs using garage band©.

Materials used and provided: iPad©, tools, safety gear, found objects

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.

Day 1: Students will bore through Mount MSMS. Students will drive Sphero from A to B.

Day 2: Students will drive Sphero through a turn and jump a ramp.

Day 3: Students will drive Sphero through multiple turns and multiple jumps.

Day 4: Students will create an obstacle course.

Day 5: Students will teach their parents how to drive the Sphero.

POSITIVELY MEDIEVAL MEDICINE

Medieval medicine wasn't always leeches! This class will explore many of the advancements...and missteps... made in medicine during the middle ages. Herbal remedies, Curing Stones, Leechcraft, Leonardo Da Vinci, and more will be investigated in this positively medieval class.

UNRAVELING THE MYSTERY WITH FORENSICS 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!