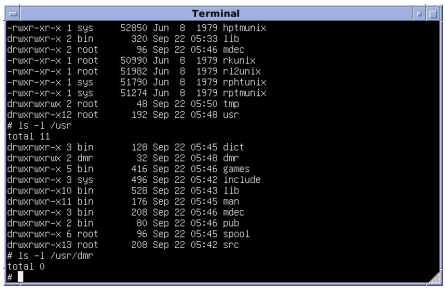
2018 Course Selections

Boys' Weeks

Programming

Instructor: Alex Hennings



An introduction to computer programming using a language called Processing. Campers will be guided through the design and creation of an interactive application using tricky geometry and simple graphics. What will we make? That's up to you!

Parts and Pieces

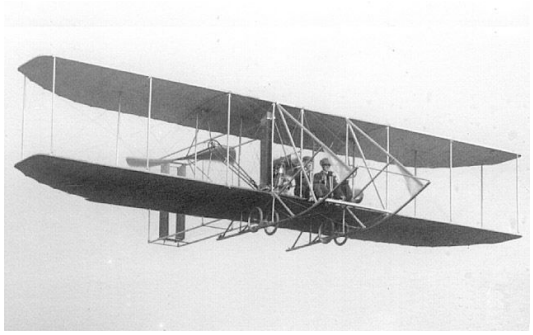
Instructor: Alex Hennings

Campers will research, disassemble and reverse engineer electronic junk. After the dust settles, they will have produced an informative presentation describing everything there is to know about their gadgets. Gizmos slated for destruction may range from cell phones to entire computers.

What's in the Sky?

Instructor: Jacqueline Rogers

Learn about the Wright Brothers as we discuss lift and what keeps planes in the air, and design your own balsa wood plane! We will also use everyday materials to move objects across the room, then create our own compressed air rockets. There is more than one way to fly!



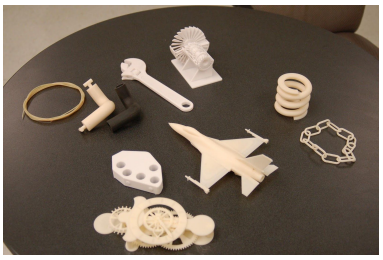
Geology- More than Rocks in a Box!

Instructor: Jacqueline Rogers

This course will allow you to explore wonderful world of Geology. We will use a candy experiment to learn about igneous, metamorphic, and sedimentary rocks. Next you will learn to identify rocks using their physical features, and perform tests to compare them. Learn about the Earth's layers and create an example seismograph, then explore the field of paleontology.

We See 3D

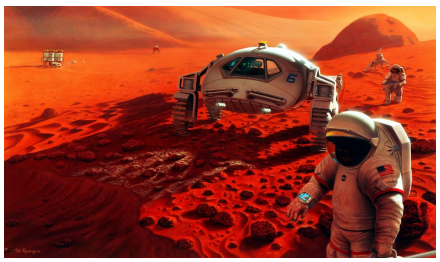
Instructor: Christopher Beckwith



Campers will use Tinkercad to design a 3D model of something that could benefit them in another course. They may choose to design fins or a nose-cone for their rockets, a musical instrument, a puzzle, a component for their Rube Goldberg machine, playing pieces for a board game… whatever they imagine they can model in the application. Throughout the week, the instructor will analyze the students' designs and help them refine their models for successful printing. Ultimately, each student will be able to print a 3D model of their design using 3D printers.

Welcome to Mars, your new home

Instructor: Christopher Beckwith

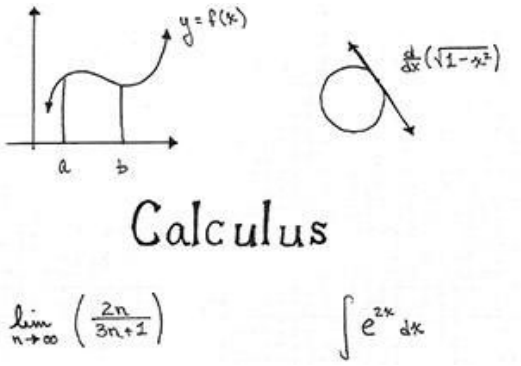


Participants will use Google Earth and other online resources to explore some of the topographical features of Mars, and by researching the existing conditions, they will determine the factors that must be considered to establish a sustainable human colony on the Red Planet. Following their research, the young colonists will then become specialists, each designing an essential component of a Martian colony. Communication and cooperation will be essential in developing the layout of their colony as they build collaboratively on a specially designed Minecraft server with the Galacticraft/Mars plugin. The colonists will work side-by-side physically and virtually, racing against time to construct the necessary elements for survival and comfort on a hostile world. Their final test will be removing their oxygen masks to see if the oxygen systems they've constructed in their habitats can indeed sustain life.

Calculus in a Week: Holy Smokes!

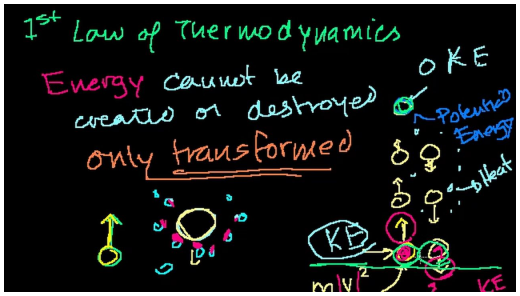
Instructor: James Robertson

We are going to blast through calculus in a week! In this whirlwind tour of mathematics, we are going take a few functions and learn how to take limits, derivatives and integrals. Don't know what those are? You will at the end of the week! You might even know more than your math teacher!



Operation Thermodynamics

Instructor: James Robertson

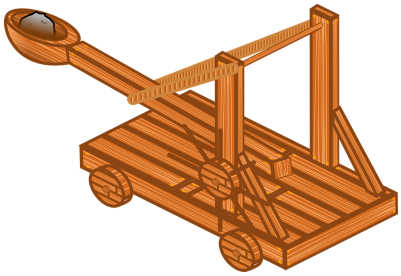


Your mission, should you choose to accept it, is to convert energy into work and work into energy. You will learn about the zeroth, first, and second laws of thermodynamics and how to use them to accomplish your mission.

Just Launch it

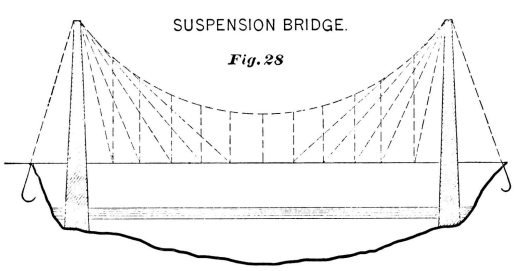
Instructor: Gary Kaszas

Students will create trebuchets/catapults in order to launch a projectile the farthest and with the most accuracy. They will complete their own design research, and construct them using materials supplied. By day 5 students will have applied Sine and Cosine, and eventually, at the end of the course be able to predict ballistic trajectories. Hopefully, we will not leave tennis balls on the roof of Limestone Community School!



The Bridge Explosion

Instructor: Gary Kaszas



Students will learn how engineers work and what goes into designing and building a complex, but a necessary structure that is used by people in all parts of the world every day. Students will use everyday items, such as, Popsicle sticks, toothpicks, straws, clay, cereal boxes, wood, playing cards...to build their bridges. They will also have to research different types of bridges, sketch the bridge they envision, write a simple report that provides details on how their bridge will be used, how it makes life easier for everyday activities (and by people) and upon completion, explain the process it took to design and complete their bridge, and how they can improve their bridges.

The Reptile Garden - Where Wild Things Grow!

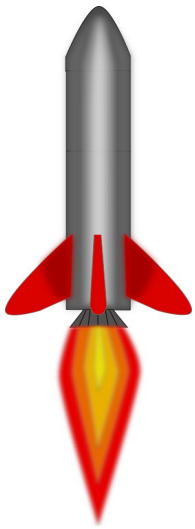
Instructor: Tom Moore

This hands-on course will take an in-depth look into the world of reptiles. We will learn about husbandry, native habitats, expose myths and reveal fascinating facts about turtles/tortoises, lizards, crocodiles/alligators and snakes. Throughout the week we will design and build our own "turtle/tortoise" shell, explore the superpowers of lizards that make them incredible predators or unlucky prey, test the force behind a croc/alligator bite and look at the inner workings of a snake through dissection...how many teeth did you say? Last but not least, get up close and personal with a few of our "live" mascots!

Astronomical Adventure Tour

Instructor: Larry Berz

The overall thematic thrust of the week surrounds a hands-on vigorously interactive set of activities and lessons detailing those wonders of the Universe of singular interest to the middle school to early high school age student. Reinforcement occurs throughout the evening, including observations with telescopes and unaided eye.



Lift-Off!

Instructor: Larry Berz

The return of the hands-on, interactive discovery approach investigation of model rocketry along with personalized applications. Special emphasis placed upon rocket design and engineering, construction, instrument making, experimenting, team-building, launch skills, and math applications. Emphasis also placed upon historical significance of American and Soviet (Russian) aeronautics and space exploration during the 1960s and 1970s to provide documented evidence of American and Russian technological achievement and national determination.

Lego Robotics

Instructor: Laurie Spooner

Legos and robots! What can be a better combination? You will use Lego Robotics kits to build and program your own competition machines. You will start building the first day and have the opportunity to participate in closest to the pin, maze runner, and tractor pull challenges. Along the way, we will talk about sensors, computer programing, and physics.

Lego Robotics Pentathlon (Advanced Robotics)

Instructor: Laurie Spooner

Are you ready to show off your building and programming skills? You and your team will work together to prepare for a pentathlon on the last day of class. On the first day, you will be introduced to the five challenges and provided the lego robotics kits. As the week progresses, you will plan, build, and program to become the MSSM Pentathlon Champion.

Creating Brave New Worlds

Instructor: Lisa Fernandez Mitchell

Do you love scifi, steampunk, and fantasy? How do artists use science to create brave new worlds and everything within them? How do the arts inspire scientists, engineers and mathematicians? This hands on class will create art inspired by science using collage, drawing and found objects.

The Beauty of Moving Matter

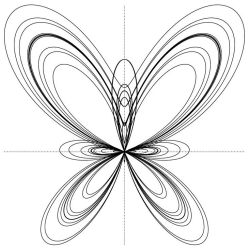
Instructor: Lisa Fernandez Mitchell

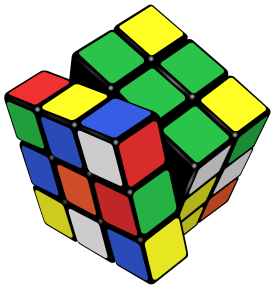
This hands on art course uses different ways of moving matter to create jewelry and other small items. Join the fun as we etch copper with salt water and electricity, fuse glass with a microwave, and recycle plastic into new creations with heat.

Let's Make a "Math-terpiece"

Instructor: Nicole Karod

We will discover different mathematics concepts through art, and will look closely at geometry with a focus on angles, the use of a protractor, scale and symmetry. Each math concept will create amazing art pieces.





You Can Do the Cube

Instructor: Nicole Karod

We will look at the math behind the cube, the algorithms, and you will learn how to solve the cube! Then students will choose a mosaic for the class to work on and by the end of the course we will have made a large mosaic made entirely from rubik's cubes!

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Cracking the Genetic Code

Instructor: Kelci O'Neill

Hey there codebreakers! Have you ever wondered why you have freckles but your friends don't? Well the answer can be found in your personal genetic code, or your blueprint: DNA! Did you know that if you have blue eyes, you have the recessive gene for eye color? Did you know that the human genetic code goes on for 3 billion (with a B) units, and that you have five feet of DNA in every single one of your cells? Do you have a hitchhiker's thumb? What percentage of the class has a widows peak? We will explore traits and genetics by making family trees with wizards and muggles, and tasting by taste testing things like cilantro and PTC paper! We will explore base pairs by making DNA bracelets and making a DNA model out of candy! We will learn about DNA replication by doing our own Jurassic Park lab! Lastly, we will extract our own DNA and make a necklace from our genetic material! If you have a hankering for human diversity, then *Cracking the Genetic Code* is the course for you!

Refrigerator Science: Not Your Average Soda and Mentos!

Instructor: Kelci O'Neill

You know how you leave food in the fridge for too long, and your parents call it a science experiment? Well they have never seen experiments like these! In *Refrigerator Science,* you will learn all about how to play with your food! We will learn about the different minerals your body needs when we make nails from our breakfast cereal! We will learn about macromolecules from our color changing milk experiment and our experiment where we extract DNA from fruit! We will learn about different densities from our experiments with eggs and solutions, and our experiment in making a sugar rainbow! Sugar will also be used to make crystals in rock candy, and in our experiment in making liquid nitrogen ice cream! If you have an interest in chemistry, biological molecules, or just plain old food, this is the course for you! Bon Appetit!