ROBOTECH PARENT LETTER SPRING 2018

We are offering a variety of exciting technology and robotic activities for this Spring. Sessions include coding, robotics, stop motion video production, simple and motorized machines and architecture studio.

Please note that shorter sessions may not complete all of the following.

CODECOMBAT:

We are introducing a new coding mechanism that we believe the children will love:

Students will have a great adventure while they learn to code with CodeCombat. Choosing an Avatar to battle its way through levels, a student must complete the challenge by writing the correct code and sequence to move on. With success, the player gains gems which they can use to buy armor or skills to progress through the game. We will begin learning Python but the program can be used to teach LUA, Javascript and more. CodeCombat is considered one of the best learning tools and can be used at home.

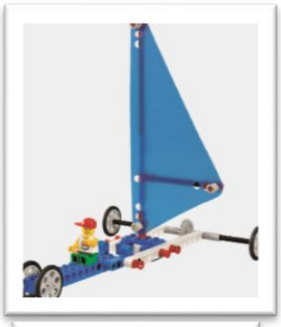
STOP MOTION VIDEO PRODUCTION:

Then we are on to an introduction to Stop Motion Videos where students will create their own stop motion film. Students will need to use their Sequential Reasoning capabilities and thought processes to create their video. First, students need to lay out a plan that starts with a story-line followed by the storyboard. As students begin to set up their stage they will have to check and test all equipment for glitches! In stop motion filming, every step must be taken in the correct order, one small movement at a time, just as a robot is programmed to move from point A to point B. This helps students to gain an understanding of the concepts introduced in coding! Using logic and creativity results in all around great fun!

ROBOTICS

Robots will be built and programmed with Lego ® MINDSTORMS® NXT's! Each robot built will concentrate on a specific function. Our first robot uses Move Blocks to introduce basic move abilities on the part of the student. As the programmer becomes more adept we add on the Touch Sensor to the front end of the robot. The touch sensor will depress when it comes into contact with a solid object. Students will program the bot to back up and turn in a different direction. The Ultrasonic Sensor robot will not need to have physical contact with a solid object. It will sense the wall it's headed toward, like a bat with echo location, and redirect its progression. The last bot we program will be a Light sensor bot. This bot will DeTECt different colors with the programming, telling the bot if it is going the right way. Green, red, and blue colored strips of tape will be laid out on the floor. As the robot passes over or comes in contact with these colors it will call the colors out so the students will know whether they are programming correctly or not.

SIMPLE AND MOTORIZED MACHINES



With Lego ® **Simple Machines and Mechanisms** our students will build a Land Yacht as we explore different kinds of power and forces. Of course, the Land Yacht will use wind to enable it to roll across the floor. How fast will it go? If the wind blows straight at the land yacht from behind will the sail pick up the wind and move the yacht? Students will test wind angles to see which is the best. How about the size of the sail? If it were larger, would the yacht go faster? We will find out as we explore the power of wind!

Using **the Hammer** students will be testing the clutch power of gears. What is clutch power? Each gear used in the Lego ® set has a different grip when it comes to the size of the gears. A smaller gear will grip the axle more loosely than a 40-tooth gear. What difference does it make? This relates to the force needed to pound a hammer into different types of wood. Some wood is denser than others and needs more force to pound home a nail! We will test to see how much force is used for each!

Tower Crane: Why do Cranes use pulleys for lifting? It takes less effort to lift heavy objects if you use a pulley, than if you were to lift a heavy object directly! What about speed? How does the weight of an object effect the speed with which it is lifted? Students will experiment with several pulley types and weights to explain how each one changes the outcome with each lifting experience.

ARCHITECTURE STUDIO:

Reading Blueprints: This architecture class, using the Architecture Studio box by Lego, will see your students examining, reading and building from blueprints. What is a load bearing wall? Why do you normally have bathrooms and kitchens along the same walls or areas. We are learning to recognize these on the floor plans. Students will then build the basic structure of the house. Once they understand the floor plan they will create their own and then build it. Given the time we will begin drawing blueprints in specific styles and build from them.