# COMPUTER ADVENTURES

# SUMMER CAMP 2018

605 Millwood Road , Mount Kisco, NY

(914)218-8175

westchester@computeradventures.com

PROGRAMMING VIRTUAL REALITY APPS GAME DESIGN
ANIMATION DIGITAL GRAPHIC MINECRAFT
ELECTRONICS 3D MODELING & 3D PRINTING ROBOTICS

| | |
|---|---|
| Week 1 : 6/25 to 6/29 | Week 5 : 7/23 to 7/27 |
| Week 2A : 7/02 to 7/03 | Week 6 : 7/30 to 8/03 |
| Week 2B : 7/05 to 7/06 | Week 7 : 8/06 to 8/10 |
| Week 3 : 7/09 to 7/13 | Week 8 : 8/13 to 8/17 |
| Week 4 : 7/16 to 7/20 | Week 9 : 8/20 to 8/24 |

| | | | |
|---|---|---|---|
| Full-day | 9am to 4:30pm | (5 days) | $690 |
| Full-day | 9am to 4:30pm | (2 days) | $280 |
| AM Half-day | 9am to 12:30pm | (5 days) | $395 |
| PM Half-day | 1pm to 4:30pm | (5 days) | $395 |

Early drop-off and late pick-up services available

**Discounts**

Early Bird: $20 off each session (expires 4/1/18)

Online registration system will automatically take off the discount

## Registration

www.computeradventures.com/summer-camps/

## ANIMATION

*Students' projects and resource files can be downloaded from our website a week after the completion of the course.

**LEGO® Brickfilms** **Grade 1 to 8** **Prereq: none**

Lights…Camera…Action! Create a unique story on a storyboard. Design your own movie set with LEGO® mini-figures, bricks, plates and background pictures. Using webcams, stop-motion movie software, and video editing software, create animated movies with titles, credits, transitions, and sound effects including narration. This course is fun to take with a friend.

| Start Date | End Date | Start Time | End Time |
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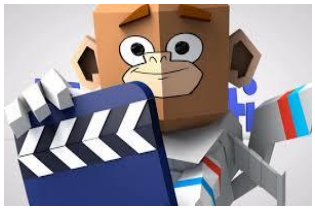
| 7/16/2018 | 7/20/2018 | 01:00 PM | 04:30 PM |

**Cartoon Maker **NEW** **Grade 2 to 8** **Prereq: none**



Tell stories through a creative storytelling tool that enables you to draw, animate and narrate 3D characters. Students create the flow of the story, settings and characters. These story elements can either be selected from pre-designed templates, or designed by you. Then create the characters' movements and narration. This course encourages students to develop their skills for the creative jobs of tomorrow, or to just explore the boundaries of their imagination.

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| 7/23/2018 | 7/27/2018 | 09:00 AM | 12:30 PM |
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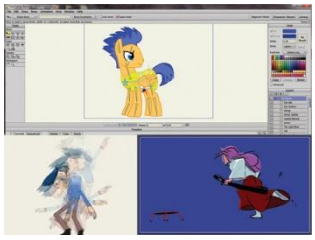
**Animation Studio **UPDATED** **Grade 4 and up** **Prereq: none**



Explore various styles of animations. Learn the techniques of 2D animation, 3D animation, and Stopmotion animation to create their own movies. Using an intuitive animation software, student will work with drawing tools, bone-rigging system, animation timeline, sounds and special effects. This course is an exciting and engaging way to introduce students to the professional animation skills.

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| 7/09/2018 | 7/13/2018 | 09:00 AM | 04:30 PM |
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## MINECRAFT

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**Minecraft® Building Wonders** **Grade 3 and up** **Prereq: none**

Want to build some of those fancy, realistic-looking awesome monuments in Minecraft? With the 7 wonders of the world monument as references, the first challenge is to replicate a famous monument utilizing various blocks, ores, crafted items and tools. Teachers will provide tips and tricks on building better structures in Minecraft. Some of these tips include applying math to scale, and creativity to aesthetic considerations. This class maybe taken more than once, because different structure types from different geographical location and/or time period will be discussed.

| Start Date | End Date | Start Time | End Time |
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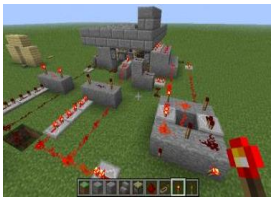
**Minecraft® Machine Marvels** **Grade 3 and up** **Prereq: Experience with Minecraft**



Create contraptions with items such as pistons, pressure-plates, levels, buttons, trip wire, lava, water, doors, dispenser, TNT and redstone. Learn how to build simple machines. The teacher will provide guidelines on how to build some simple machines. These simple machines will be connected to create an entertaining "Rube Goldberg" machine. In addition to learning about action and reaction, transfer of energy, this course will also showcase the students' logical ability as well as creativity.

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**Minecraft® Mod Coder**NEW** **Grade 3 and up** **Prereq: Experience with Minecraft**

Acquire hands-on experience in developing Minecraft mods – the ability to customize the Minecraft game. Fire arrows, launch fireballs, spawn endless mobs and many more exciting mods. As students create Minecraft mods, they will build their programming skills, and apply the fundamental concepts of object-oriented programming using a drag and drop interface for Java.

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**Minecraft® Mod Programming with Java** **Grade 5 and up** **Prereq: Experience with Minecraft**

*( See Computer Science/Programming Section)*

## APP DEVELOPMENT

**App Inventor** **Grade 4 and up** **Prereq: Experience with computers**

Want to make mobile apps? Learn how to build apps using App Inventor software; an innovative app creation software for Android devices. The software transforms the complex language of text-based coding into visual, drag-and-drop building blocks. This course will step you through building progressively more complex apps. Learn how to build apps, as well as programming concepts and terminology. The apps will run on any smartphone or tablets.

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**Virtual Reality Apps **NEW** **Grade 4 and up** **Prereq: Experience with computers**

Explore Virtual Reality world by building immersive VR projects using Unity 3D. Learn about the technology and psychology of VR - rendering, performance and VR motion sickness. Build an interactive 360-degree VR friendly environments with physics, gravity, animations, and lighting. Learn the basics of C# scripting language for character control. VR projects will be exported to smartphones to be viewed on Google Cardboard.

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## GAME DESIGN

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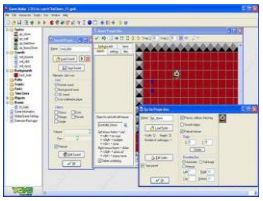
**Game Creation - Arcade** **Grade 3 and up** **Prereq: none**



Create a customized arcade-style with game elements such as the player, enemies, bonuses, levels, lives, You can be as creative as you want as you decide on the theme, player and enemy characters, design of game levels, health points, number of lives etc. In addition to having fun and gaining a sense of accomplishment, learn about computer programming elements such as input, output, variables, relative values, conditionals etc.

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**Game Creation - Platform** **Grade 3 and up** **Prereq: none**

Learn the foundation of platform games like the Super Mario or Maple Story. The player will jump between suspended platforms, over obstacles or both to advance the game; and to collect bonuses. Implement a side scrolling game with gravity, drawbridges, platforms, bosses, levels, effects. Expand game design skills, while reinforcing the knowledge of programming concepts.

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**Advanced Game Maker – RPG** **Grade 3 and up** **Prereq: some gamemaking experience**

Design a role playing game, where player assumes the role of a character. The setting is a fantasy world consisting of a town, forests, dungeons and castles. The player will act out quests through a process of decision making. Learn some advanced game design skills such as narratives, enemy behavior and special effects, while expanding their creativity, and technical knowledge to create games of larger scale.

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**3D Game Development **NEW** **Grade 4 and up** **Prereq: none**

Develop a 3D interactive game using the latest Unity® software. Thus course provides step by step approach that teaches everything from absolute basics through game physics, animation and deployment techniques. Learn how to create or import a character, create an environment, 3D texturing, lighting, composting and finally how to export the games to devices.

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## COMPUTER SCIENCE/PROGRAMMING

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**All About Computers **NEW** **Grade 4 and up** **Prereq: none**

Build a PC with Raspberry Pi – a single board computer, that promotes the teaching of Computer Science. Learn about how the computer and the internet work. Explore various computer applications and coding environments. In addition to learning about the computer hardware and software, students will practise the popular design thinking framework to design their own products.

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**Coding Your Own Games **NEW** **Grade 4 and up** **Prereq: none**


Calling all creative young gamers! Learn key concepts to creating your own games in Scratch®. Start with a discussion of what makes a good video game, and then move on to creating games. The lessons are divided into 5 levels based on complexity. Each levels presents more about basic game programming algorithm and logic. After progressing through these 5 levels, students would have mastered the coding skills to design and build their own games.

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**JavaScript® Programming 101 **NEW** **Grade 5 and up** **Prereq: Comfortable with typing**


JavaScript is used everywhere. Web browsers like Chrome, Firefox, Internet Explorer; websites like Gmail, Facebook and Twitter uses JavaScript. Starting with drag and drop interface, students will learn the basics of programming logic and computational thinking. Then they will move on to create games such as snake, breakout, pong etc. This course will cover topics such as JavaScript syntax, sequencing, repetition, conditional logic, nested loops, automation, pattern recognition, simple motion, keyboard and mouse events, creating and using an HTML canvas, operators, expressions, variables, collision detection, using arrays and objects.

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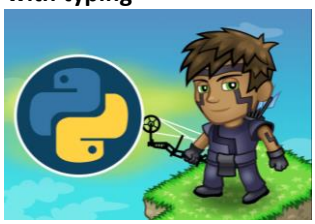
**Python® Programming 101 **UPDATED** **Grade 5 and up** **Prereq: Comfortable with typing**



Python has a gentle learning curve, but a serious language that is used by programmers professionally. Complete engaging lessons, solve challenging puzzles, and create interesting programs. This class will cover Python syntax, sequencing, repetition, conditional logic, nested loops, automation, pattern recognition, simple motion, keyboard and mouse events, pen drawing, operators, expressions, variables, Turtle graphics, using arrays and objects to store structured data.

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**Web Design with HTML & CSS **UPDATED** **Grade 5 and up** **Prereq: Comfortable with typing**


Build your own website? Learn basic concepts of building a website, and developing webpages with HTML (Hyper Text Markup Language) and CSS (Cascaded Style Sheets). Build HTML pages with text, links, images, tables. Use CSS for colors, backgrounds, formatting text, page layout, and simple animation effects. Learn the latest techniques, best practices, and current web standards - HTML5 and CSS3. Concepts explained, examples provided, and activities are fun and interesting.

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**Minecraft® Mod Programming with Java** **Grade 5 and up** **Prereq: experience with Minecraft**


Learn Java programming with Minecraft! Design and program your own Minecraft mods such as swords, tools, blocks, foods, biomes, achievements, and mobs. For every item (block or creature), design the graphics, then modify the Java code to program their new features. Learn the fundamentals of object-oriented programming such as object instantiation, call methods, parameter definitions, and run loops.

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## COMPUTER SCIENCE/PROGRAMMING

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***** Computer Programming Level 1A, 1B, 2A, 2B, 3A, 3B, 4A & 4B *****

These computer programming courses are organized into grade specific curriculum. Students learn programming concepts through visual programming in a game-like interface. They will be having some much fun, that they will not realize that they are learning programming.

**Computer Programming Level 1A **NEW** **Grade 1 to 2** **Pereq: none**

Topics Covered: Sequencing, repetition, conditional logic, automation, and pattern recognition.

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**Computer Programming Level 1B **NEW** **Grade 1 to 2** **Pereq: none**

Topics Covered: Sequencing, repetition, conditional logic, keyboard and mouse events, playing sounds, simple motion, and animation.

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**Computer Programming Level 2A **NEW** **Grade 3 to 4** **Pereq: none**

Topics Covered: Sequencing, repetition, events, conditional logic, animation, pen drawing, drawing shapes and patterns, playing musical notes, sending and receiving messages, handling user input, and color detection.

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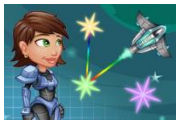

**Computer Programming Level 2B **NEW** **Grade 3 to 4** **Pereq: none**

Topics Covered: Animation sequences combined with motion, game design basics, built-in animation commands, advanced keyboard and mouse control, sending and receiving messages, Actor layering, advanced events, math operators, and functions.

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**Computer Programming Level 3A **NEW** **Grade 5 to 6** **Pereq: none**

Topics Covered: Use sequencing, pattern recognition, loops, and conditional logic to create programs. Create scenes, add sounds and music, and use keyboard controls to drive your programs. Learn about motion, broadcasting messages, and adding special effects.

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**Computer Programming Level 3B **NEW** **Grade 5 to 6** **Pereq: none**

Topics Covered: Draw geometric patterns using pen-based drawing primitives to manipulate angles, direction, sizes, and color. Build a projectile based physics game using the physics engine - manipulate gravity, hit boxes, collisions, bouncing, static platforms, impulse, velocity, and force.

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**Computer Programming Level 4A **NEW** **Grade 7 to 8** **Pereq: none**

Topics Covered: Events, keyboard and mouse interaction, conditional loops, nested loops, sending and receiving messages, fluid motion, parallax scrolling, local and global variables, functions, and object cloning.

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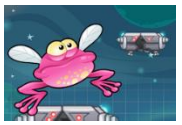

**Computer Programming Level 4B **NEW** **Grade 7 to 8** **Pereq: none**

Topics Covered: Using list variables to store structured data, using persistent cloud variables to build a leaderboard, using various types of loops, advanced flow control, using physics attributes such as velocity, impulses, and collisions, sending and receiving messages with parameters, using functions, and defining advanced conditional logic with math and Boolean operators.

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## ELECTRONICS

**Electronic Games, Gadgets & Gizmos **UPDATED** **Garde 3 and up** **Prereq: none**

Unleash your inner inventor. Learn the basics of electricity, engineering and circuitry while creating fun interactive games that emulate memory game, card game, racing games and more. Build and play with circuits to creating your own electronic inventions. Motors, wheels, lights, switches, servos, buzzers, etc are snapped together to invent a remote control racecar, build an automatic bubble blowing device, and more. In the midst of creating all the exciting electronic games, gadgets and gizmos, learn about the electronics components, circuit diagrams, symbols, connections and polarities.

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## DIGITAL GRAPHICS

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**3D Modeling & 3D Printing **UPDATED** **Grade 4 and up** **Prereq: none**

Want to master 3D modeling and 3D printing? Learn the concepts and techniques you need to build your skills, comfort, confidence, and create exciting projects. Create your own simple models such as name plates, pen holders, model cars, treasure boxes, chess pieces etc. Downloading and modifying ready-made models to creating more intricate models. Also included in the course is the information on the 3D printing revolution and the science behind how it works is also included.

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## ROBOTICS

*Students will not take the robots home. Robots can be purchased from vendors.

**LEGO® Robots Build! Code! Play! **NEW** **Grade 1 to 3** **Prereq: none**

Boost your Lego play with robots. Students build robots with familiar Lego bricks. Using a visual programming app, students will code the robots to make them come to life. Make a talking, driving and dancing robot; a purring, harmonica-playing cyber-cat; a rover ready to do the student's commands and an interactive guitar. Teachers will explain the robots' actions through the mechanics of the motor, sensors, gears, etc. After all these fun projects, build, code and play with your own robot creation.

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**LEGO® Junior Robotics** **Grade 1 to 3** **Prereq: none**

Calling all junior robotics engineers! Work with programmable smart hub, motor, sensors and various Lego bricks to build and program models such as helicopter, truck, gorilla, frog, dolphin, caterpillar and more. This course offers hands-on activities that ignites students' curiosity, while enhancing their skills in science, engineering, technology, and coding. This course may be repeated as students will work on different projects.

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**LEGO® WeDo® Robotics** **Grade 1 to 3** **Prereq: none**

Explore robotics through building models and using a computer to program the models' behavior. Our models include ferris wheel, race car, merry-go-round, crane, animals and more. Building models will improve spatial cognition and visualization abilities. Programming encourages students to think logically to produce a specific action. Students will also learn about simple engineering concepts such as pulleys, belts, gears and levels, while having a blast. This course may be repeated as students will work on different projects.

| Start Date | End Date | Start Time | End Time |
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**Drone Programming **UPDATED** **Grade 4 and up** **Prereq: none**

Drones! Drones! Drones! See your code take flight as you control and various perform stunts in the air with drones - perform piloting maneuvers like turning and strafing, do acrobatics, draw shapes and words, take photos, and make a custom controller for the drone. Use the tablet's accelerometer to steer a drone. Conduct simulation on a drone to do tricks and stunts side-view and up-down view, and then try it on the real thng. The course will also discuss what defines a drone, their everyday uses, and the science of how the mini-drones work.

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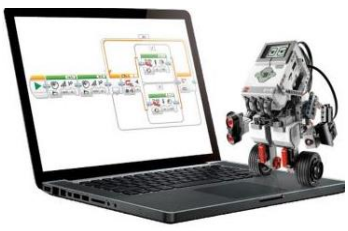
**LEGO® Mindstorms Robotics Engineering** **Grade 4 and up** **Prereq: none**



Learning about robotics engages students' natural curiosity, and helps them develop skills and confidence. Their codes come to life in ways they can see, hear, touch and even chase across the room. As the students build and program their robots to navigate an obstacle course, emulate a scorpion, or wrestle in a Sumo battle, they are acquiring knowledge about remote control (ie Bluetooth & Infrared), data hubs/wires (ie data transfer), Math concepts (ie Boolean logic, range, random, variables and constants), flow charts and more. This course maybe repeated because different robot sets and software version will be used with different projects.

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