2018-19 School Year Enrichment Courses

Our leading-edge technology courses are fun, educational, safe and confidence-building. Our programs are flexible, convenient and easy. We accommodate your schedule, your venue and provide the equipment. The recommended duration for the following courses are 8 to 12 hours.

These courses are available during the school.year. During the school breaks such as summer, holiday, winter, and spring, we provide a more extensive list of courses For more information, please contact us.

ANIMATION

Students' projects will be available for download 2 weeks after course completion.

Brickfilms Animation (ANBF)   Grade 3 to 8

Lights…Camera…Action! Students' dreams of having their favorite LEGO® characters come to life become a reality in our movie making class. Using stop-motion animation and digital post-production editing, students produce Brickfilms much like the ones viewed on YouTube. Students learn about developing creative storytelling techniques, incorporating visual and audio special effects. This is a great class to take with friends. Students can repeat the class; they will make better and different movies.

ROBOTICS

Students will not take robots/drones home.

LEGO® WeDo® Robotics (RBWD)   Grade 1 to 3

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 levers, while having a blast. This course may be repeated as students will work on different projects.

LEGO® Junior Robotics (RBJR)   Grade 1 to 3

Calling all junior robotic 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.

LEGO® Mindstorms Robotics Engineering (RBNX) Grade 4 and up

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 andwires (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.

Drone Programming (RBDP)   Grade 4 and up

Drones! Drones! Drones! See your code take flight as you control and perform stunts in the air with drones - perform piloting maneuvers like turning and strafing, perform 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 thing. 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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COMPUTER PROGRAMMING

*Students' projects will be available for download 2 weeks after course completion.

Coding with ScratchJr® (CPSJ)   Grade 1 to 3   Prereq: none

Scratch Jr was designed for younger children as a precursor to other programming languages. Students control how their characters look and move; add sounds and images; and then use the programming blocks to bring their characters to life. Students create and express themselves with the computer, rather than just interact with software created by others. They also learn to think sequentially, explore cause and effect, and problem-solving skills.

Programming with Scratch® (CPSR)   Grade 4 to 8

Scratch® is a programming language that was invented by MIT. Through the creation of interactive stories, animations and games, students will develop a foundation of programming concepts (such as variables, loops, conditional statements, event handling and more) that will prepare them for higher level programming language.
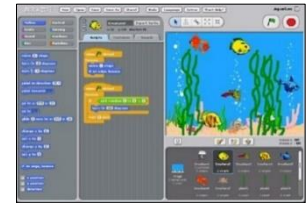
COMPUTER CODING CLUB

These courses introduce programming fundamentals to students. These 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.**Internet access needed.**

Computer Coding Level 1A (Grade 1 and 2)

Topics Include

Sequencing, repetition, conditional logic, keyboard and mouse events, playing sounds; simple motion, animation.

What Students Learn

Introduction to basic programming	Using loops for repetition
Conditional logic	Sequencing tasks
Recognizing patterns	Using automation
Debugging programs	Problem solving

Computer Coding Level 1B (Grade 1 and 2)

Topics Include

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

What Students Learn

Sequencing tasks	Recognizing patterns
Using automation	Using loops for repetition
Conditional logic	Debugging programs
Program simple animation and motion	Problem solving

Computer Coding Level 101 (Grade 3 and 4)

Topics Include

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

What Students Learn

Design animated characters	Create interactive scenes
Make animated birthday cards	Write cartoon stories
Create a music machine	Experiment with math art
Design and build small games	Troubleshoot and debug simple programs

2018-19 School Year Enrichment Courses

<div style="background:red">COMPUTER CODING CLUB</div>

Computer Coding Level 102 (Grade 3 and 4)

Topics Include

Animation sequences, motion, game design basics, built-in animation command, advanced keyboard and mouse control, sending and receiving messages, actor layering, advanced events, math operators, functions,

What Students Learn

Design animated characters	Create interactive scenes
Make animated birthday cards	Write cartoon stories
Create a music machine	Experiment with math art
Design and build small games	Troubleshoot and debug simple programs

Computer Coding Level 201 (Grade 5 and 6)

Topics Include

Sequencing, pattern recognition, loops, conditional logic, scene, sounds and music creation, keyboard controls, motion, broadcasting messages, special effects

What Students Learn

Create interactive scenes	Design animations using loops
Program motion along x- and y-axes	Build algorithms using conditional logic
Understand scripts running in parallel	Program music using notes, tempo and instruments
Create different scenarios and effects in games	Publish projects to the Web

Computer Coding Level 202 (Grade 5 and 6)

Topics Include

Geometric patterns, angles, projectile, physics engine, gravity, hit boxes, collisions, bouncing, static platforms, impulse, velocity and force, timers, interactions between objects, special effects

What Students Learn

Draw patterns using pen drawing commands	Program fluid motion with keyboard control
Control Actors using messaging	Define and use functions with parameters
Build projects using gravity, impulse, and velocity	Build their own versions of classic arcade games

Computer Coding Level 301 (Grade 7 and 8)

Topics Include

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

What Students Learn

Build complex multi-level games	Use variables to keep score
Use cloning to create actors programmatically	Build algorithms using complex conditional logic
Understand parallelism with multiple scripts	Program different behaviors for different actors
Publish projects to the Web	Troubleshoot and debug programs

Computer Coding Level 302 (Grade 7 and 8)

Topics Include

List variables, structured data, loops, advanced flow control, physics attributes, velocity, impulses; collisions; sending and receiving messages, parameters, functions, advanced conditional logic math, Boolean operators

What Students Learn

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Build a complete projectile-based physics game	Build a complete platformer game using physics
Programmatically generate never-ending platforms	Program a hero with multiple actions and access them via keys
Use variables to keep score and game speed	Program enemy A.I.

2018-19 School Year Enrichment Courses

GAME DESIGN

Students' projects will be available for download 2 weeks after course completion.

Game Programming-Arcade (CGAR)   Grade 3 and up

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.
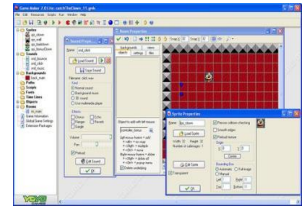
Microsoft® Kodu Game Lab (CGKD)   Grade: 3 to 8

Microsoft's Kodu gives users control of powerful programming tools using simple graphical commands. Students will create 3-D worlds, add characters, and then make them interact or complete tasks. Students will program scoring, spawning characters, enemy objects, timers, health and various game levels. Based on "when something happens", "do something" logic, students analyze problems and structure their solutions. Student can repeat this class, as the instructor can work on different games.

MINECRAFT

Students' projects will be available for download 2 weeks after course completion.

Minecraft® Survival Quest (MCSQ)   Grade 3 to 8

Students will navigate the Minecraft world to explore, complete quests, strategize and build creations in a logical way to survive in the virtual 3D world. They will practice creative thinking, problem solving, teamwork and collaboration with proper online etiquette. To ensure a fun and safe "cyber" environment, every student's laptop is connected to a local network without access to the internet. Concepts such as network, server, client and applications will also be discussed.

Minecraft® Building Wonders (MCBW)   Grade 3 and up

Want to build some of those fancy, realistic-looking awesome monuments in Minecraft? With the 7 Wonders of the World 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 may taken more than once, because different structure types from different geographical location and/or time period will be discussed.