

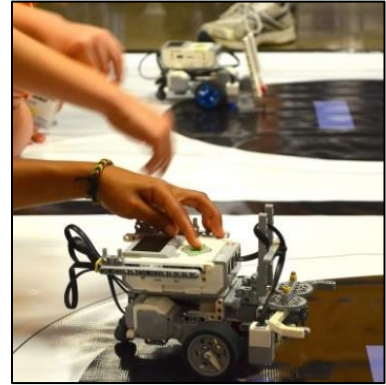
STEM CAMPS

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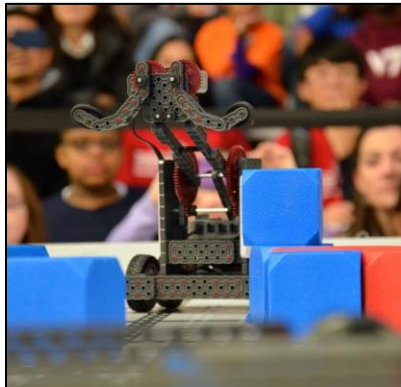
SYSTEMIC SOLUTIONS
NORTHERN VIRGINIA COMMUNITY COLLEGE

LEGO EV3 Robotics Camp

This one week camp is planned for rising 3rd through 5th grade students. In pairs, they will build an autonomous robot to carry out pre-designed missions. Students will design, build, and program a LEGO EV3 robot that will operate autonomously to compete against other camp teams in competitions such as the SumoBot Challenge and the Maze Challenge. Additional activities such as science experiments, may also be integrated throughout the week. Students will learn project management in a team setting, how to build with the LEGO EV3 platform, and basic programming of the EV3 system. The teams will compete in a final competition towards the end of the week.



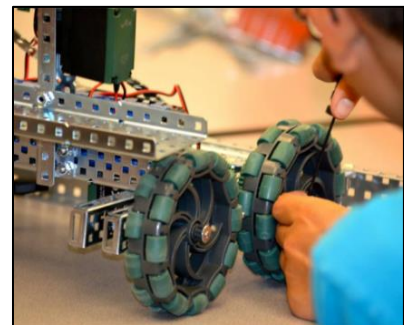
VEX IQ Robotics Camp



This one week camp is for rising 4th through 8th graders. In pairs, students will build an autonomous robot to carry out pre-designed missions. Students will design, build, and program a VEX IQ robot that will operate autonomously and via remote control to compete against other camp teams in competitions such as the SumoBot Challenge and the Maze Challenge. In this camp the students will code in RobotC to integrate sensor feedback into their autonomous code. Students will learn project management in a team setting, how to build with the VEX IQ system, and basic programming of the robot. The teams will compete in a final competition towards the end of the week.

VEX 1 Robotics Camp

This one week camp introduces rising 6th through 12th grade students to competitive robotics through the VEX EDR robotics design system. This camp is ideal for students interested in coding and robotics. In pairs, students will build and program a robot to operate on a field by remote control and autonomously. Students will learn basic computer programming in RobotC by completing sensor integrated challenges throughout the week. The teams will compete in a final competition towards the end of the week.

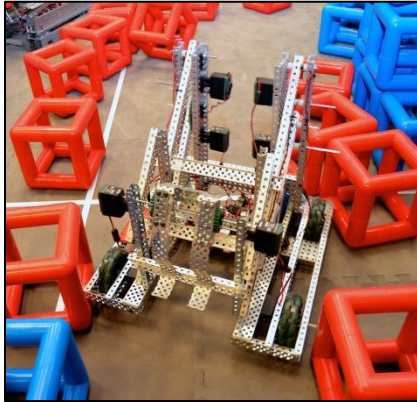


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VEX 1.5 Robotics Camp

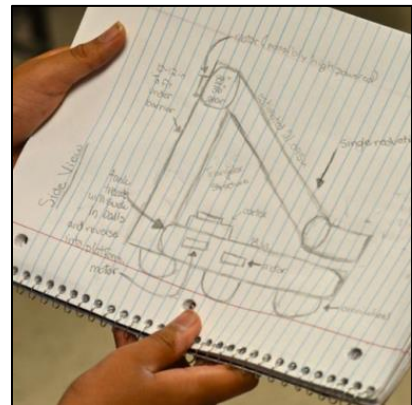


In this camp rising 7th through 12th grade students will work in groups of 3 to 4 to build and program a robot using the VEX EDR platform. In this 2 week camp students will build a robot that incorporates a large drive-train with a lift system. These techniques will be combined with advanced programming topics that will allow the students to navigate autonomously with sensor input. Students will design a custom intake mechanism for their robot. This camp is ideal for students who have experience using the VEX Robotics System through a previous summer camp or through a competitive team during the school year. The camp teams will compete in a final

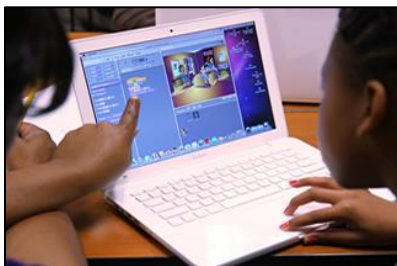
competition towards the end of the week.

VEX 2 Robotics Camp

In this camp rising 8th through 12th grade students will work in groups of 3 to 4 to build and program a robot to be able to compete using the VEX EDR platform. In this 2 week camp students will design, build, and program a robot that could compete in the current VRC game. A variety of building techniques and options will be taught with advanced programming topics that will allow the students to navigate autonomously with sensor input. This camp is ideal for students who have 1-2 years of experience using the VEX EDR Robotics System on a competitive team and students will need a recommendation from the team coach. The camp teams will compete in a final competition towards the end of the week.



STEM Camp Elementary School



This weeklong camp is for students in rising 4th and 5th grades and will broadly cover STEM through a variety of activities such as CAD, Coding, Math and problem based challenges. Students will learn about CAD and 3D printing utilizing TinkerCAD and coding using Scratch. Students will also solve some math activities as well as use their logical thinking skills to solve some problem-based activities.

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STEM Camp Middle School

This weeklong camp is for students in rising 6th through 8th grades and will broadly cover STEM through a variety of activities. Computer aided design (CAD) will be explored, assembly using SnapCAD and coding using Robot Virtual World programming will allow students to solve challenges using a virtual robot and RobotC. Students will also make simple circuits and programming those using Arduino boards as well as get introduced to sketching. In addition, students will be able to use their logical thinking skills to solve some problem-based activities.



Rocketry Camp



This one week camp will introduce rising 7th through 12th grade students to rocketry. During the camp students will learn the basics of rocketry, the science behind how they work, rocketry safety as well as building and launching several rockets. Students will also learn how to use RockSim, a simulation tool that will help guide the building process and simulate launching rockets before they are even built. The students will have a field trip on the last day of camp to a launch site to safely launch their custom designed rockets.

Cybersecurity Camp

This one week camp is for rising 9th through 12th graders and will introduce the students to the world of Cybersecurity. This camp is designed to provide students with knowledge and hands-on experience in cybersecurity and introduce them to the many career opportunities in the growing field. The camp will increase students' knowledge of networking and computer security including attack and defense strategies, all through tutorials, hands-on activities and will culminate with a mock competition towards the end of the camp. Students must bring their own laptop with the minimum specifications: **an i5 or comparable AMD processor (NO Macs/Apple based laptops), 6 GB of RAM and 20 GB free hard drive space available.**



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Tech Entrepreneur Camp

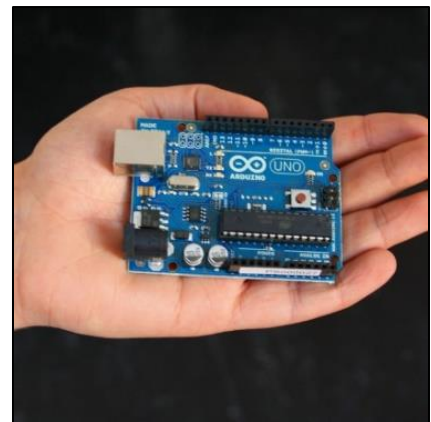


Smartphones, tablets, Facebook, Google Maps, computers, and robots all run on software applications, making coding and app development some of today's most sought-after skills. Combine this with the introduction of app marketplaces where anyone can post and sell their mobile application or game, and there is no doubt why tech start-ups are popping up all over our region. In this one-week

camp, students in rising 8th through 12th grade will work in small groups using visual programming platforms to build their own unique app and learn real-world entrepreneurship skills such as self-awareness, public speaking, and teamwork to simulate launching their own company. At the end there will be a Shark Tank-style pitch session to determine which groups' product goes to market. There are no prerequisites for this camp, other than an active imagination and an interest in computers!

Programming Skills Course

This course will provide students in rising 9th through 12th grade with new skills in programming and electronics engineering. The goal of this camp is to shift focus away from simply using electronics to understanding how they work by programming them! Students will learn to work with an Arduino Board to combine components like LEDs, motors, and sensors. Students will also learn how to program starting with the very basics, turning on and off an LED, to more sophisticated situations like maneuvering a car. We will use real life examples to help students understand the importance of the skills taught in camp. This course is taught for 2.5 hours in the evening for two days a week over the span of 4 weeks.

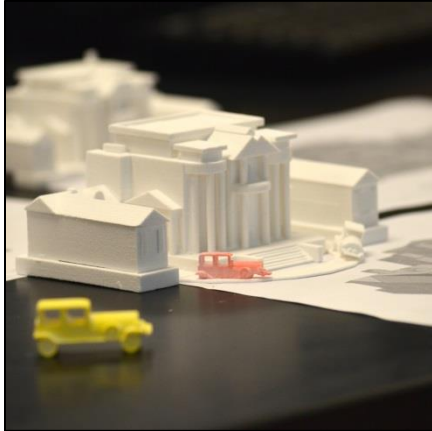


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CAD/3D Printing Skills Course



This camp is for rising 9th through 12th grade students and explores how significant innovations in the areas of 3D computer graphics and 3D printing technologies are revolutionizing how designers, artists, and engineers create products and tools. Students will learn an overview of modern 3D design and modeling techniques and also explore the range of printing and prototyping technologies in use today. The mission of this 3D Printing and Engineering Design Course is intended to provide students with the tools to bring design ideas to life. Imagining a concept in your mind is just the beginning. A product may then be brought to life through the application of advanced engineering tools like Computer Aided

Design (CAD) and 3D printing. By the end of the camp, students will have gained hands-on experience creating their own designs and shaping the creative process to final printed production. This course is taught for 2.5 hours in the evening for two days a week over the span of 4 weeks.