2017 SUMMER

FAIRFAX COLLEGIATE

Have Fun And Learn

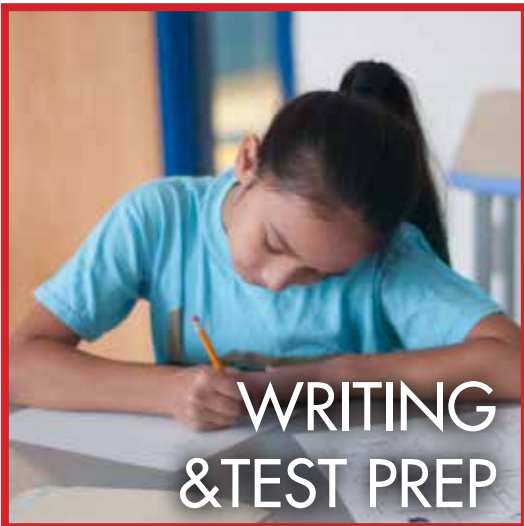1993

FOR RISING GRADES 3-9

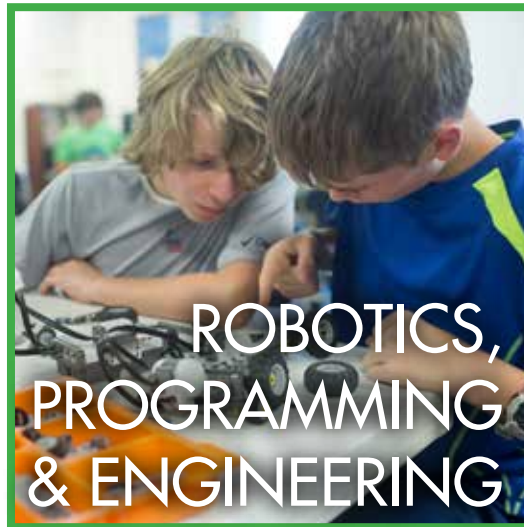FILMMAKING & ANIMATION

SCIENCE & MATHEMATICS

DEBATE & PUBLIC SPEAKING

WRITING & TEST PREP

ROBOTICS, PROGRAMMING & ENGINEERING

ART & DESIGN

12 NO. VA LOCATIONS

FAIRFAX COLLEGIATE SUMMER 2017

This summer your child can have fun *and* learn!

Since 1993, the Fairfax Collegiate Summer Program has provided challenging and engaging courses in writing, reading, math, science, test prep, public speaking, engineering, robotics, programming, Minecraft, art, design, and filmmaking.

Small classes take place in a relaxed and informal atmosphere at our twelve locations throughout Northern Virginia. Courses are built around creative activities that are captivating and entertaining, as well as informative.

Summer Program instructors include undergraduate and graduate students at leading universities, as well as area public and private school teachers. They take into account each student's interests and needs, and students are able to get help from an instructor at any time. Breaks include soccer, basketball, and other sports.

Over 4,000 students attended Fairfax Collegiate programs last year. Register today to reserve your child's opportunity for academic and creative growth at Fairfax Collegiate!

ACADEMICS, ARTS, TECHNOLOGY—A NEW UNITY!

Alexandria Campus
Beth El Hebrew Congregation
3830 Seminary Rd.

Ashburn - East Campus
Loudoun School for the Gifted
44675 Cape Ct.

Ashburn - West Campus
St. Theresa Catholic School
21370 St. Theresa Ln.

Chantilly Campus
St. Timothy Catholic School
13809 Poplar Tree Rd.

Dulles Campus
St. Veronica Catholic School
3460 Centreville Rd.

Fairfax Campus
Gesher Jewish Day School
4800 Mattie Moore Ct.

Falls Church Campus
St. Katherine Greek Orthodox Church
3149 Glen Carlyn Rd.

Herndon Campus
St. Joseph Parish Hall
750 Peachtree St.

McLean Campus
Redeemer Lutheran Church
1545 Chain Bridge Rd.

Oakton Campus
Pinnacle Academy
2854 Hunter Mill Rd.

Reston Campus
Northern Virginia Hebrew Congregation
1441 Wiehle Ave.

Vienna Campus
Green Hedges School
415 Windover Ave.

PROGRAM OVERVIEW

SUMMER SESSION PRICING

Session	Start Date	End Date	Duration	Half Day	Full Day
Session 1	June 26	June 30	5 days	$220	$345
Session 2	July 3	July 14	9 days*	$390	$620
Session 3	July 17	July 28	10 days	$435	$690
Session 4	July 31	August 11	10 days	$435	$690
Session 5	August 14	August 25	10 days	$460	$740

*No class July 4

Siblings/Multiple Sessions: Save 5% when you register siblings or for multiple sessions

Program Times
Morning   8:30 a.m. to 12:00 p.m.
Afternoon 12:30 p.m. to 4:00 p.m.
Full Day   8:30 a.m. to 4:00 p.m.

Extended Care Hours
Morning   7:30 a.m. to 8:15 a.m.
Afternoon 4:15 p.m. to 6:00 p.m.

Extended Care Fee
Morning $85 per 10 day session
Afternoon $85 per 10 day session

Office Address
722 Grant St., Suite J
Herndon, VA 20170

SUMMER PROGRAM REGISTRATION

Plan your child's schedule and register online at *www.FairfaxCollegiate.com*

Grade Levels and Placement
Course grade levels are *rising grade levels*, the grade levels students will enter in the Fall of 2017. Please contact us before enrolling a child in a course designated for older or younger students.

Registration Deadlines
We enroll students until classes are full. Many classes are full by late April. We maintain waiting lists for full classes.

Payment Options
A non-refundable deposit of $100 per session (applied to the total cost of the program) is due at registration. The balance is due May 1, 2017. There is a 5% discount for full payment by March 15.

Registration Changes
Registration changes may be made at no charge if the total number of classes remains the same or increases.

Cancellation Policy
For cancellations before May 1, Fairfax Collegiate will refund program fees less the non-refundable deposit of $100 per session. After May 1, we will provide a credit for program fees paid for use by a family member in a future program.

Emergency Contact Form
There is a one-page *Emergency Contact and Permission Form*. There is no required health form.

Complete Participation Terms
Please visit *www.FairfaxCollegiate.com/ summer/participation-terms*.

WRITING AND READING

Writing Fundamentals
Grades 3-4

Students write and revise sentences, paragraphs, and short essays.

This course emphasizes word choice, spelling, sentence structure, paragraph organization, and proofreading.

Instructors provide detailed suggestions for improving spelling and grammar as well as ideas and organization.

Writing & Revising
Grades 3-4

Students write, revise, and discuss personal narratives, essays, short stories, and poems.

Topics include writing organized paragraphs, constructing persuasive written arguments, providing constructive criticism, and revising drafts. Instructors provide detailed written and verbal feedback on student work.

The final project is a class literary anthology.

Story Writing
Grades 3-4

In this creative writing course, students learn to craft their own stories. They practice the writing process and explore components of an effective story. Topics include compelling characters, memorable settings, plot outlines, and point-of-view.

Students workshop their stories in class and receive detailed feedback from instructors. As a final project, students create their own short stories.

Reading Reinforcement
Grades 3-4

This course emphasizes reading as well as writing.

Students read, discuss, and respond to diverse readings including poems, fables, stories, essays, and journalism.

Assignments include summaries, reading comprehension exercises, and interpretations.

Reading Newbery Winners
Grades 5-6

Every year the American Library Association awards the Newbery Medal for the best new work of literature for children.

In this course students read, discuss, and write about two Newbery Award-winning books, *A Wrinkle in Time* by Madeleine L'Engle, and *When You Reach Me* by Rebecca Stead.

Students keep their books and learn to use underlining, margin notes, and diagramming to improve comprehension.

Writing Skills & Grammar
Grades 5-6

This writing course focuses on organization, paragraph construction, grammar, spelling, and mechanics.

Topics include brainstorming, outlining, thesis statements, sentence structure, transitions, essay organization, active voice, word choice, and common errors.

The Writing Process
Grades 5-6

Students prewrite, draft, revise, edit, and share fiction, nonfiction, and poetry.

Instructors guide students through each step of the writing process and provide detailed feedback. Students improve their ideas, organization, spelling, and mechanics.

For a final project, students create a class anthology of essays and stories.

Creative Writing
Grades 5-6

Students read, write, and discuss personal narratives, short stories, plays, and poems.

Students revise drafts of their works based on instructors' written comments.

The final project is a class literary anthology. Students may enter their works into writing contests.

Strategic Reading
Grades 5-6

Students learn and apply reading strategies and tools including close reading, looking for cause and effect, note-taking, outlining, paraphrasing, questioning, skimming, summarizing, and synthesizing.

Students write and revise responses to readings from newspapers, essays, biographies, speeches, and short stories.

Writing Seminar
Grades 5-6

This is a fast-paced, advanced course for students who are enthusiastic writers.

Students read and discuss great short stories and write and revise their own stories.

Topics include point of view, character, conflict, plot, setting, atmosphere, dialogue, and narrative voice.

The final project is a class anthology of short stories. Instructors help students who wish to submit their best work to writing contests.

High School Writing
Grades 7-9

Students practice short-form high school-level writing focusing on five-paragraph essays.

Topics include essay and paragraph structure, persuasive arguments, thesis statements, clean style, mechanics, grammar, diction, and idioms.

Students write and revise daily five-paragraph essays.

Reading for Meaning
Grades 7-9

This is an introduction to critical reading and writing. Genres include short stories, journalistic writing, essays, and poetry.

Classroom exercises develop important literary analytical tools including compare/contrast, cause/effect, and prediction.

Students write a variety of compositions on the results of their analyses and the literary themes expressed in the texts. They also write an original work.

Writers' Workshop
Grades 7-9

This course provides middle school students with intensive practice in writing. Classes are small-group seminars.

Students learn the entire writing process including brainstorming, outlining, composing, editing, and revising.

Writing assignments include short stories, poems, articles, and personal essays.

Epic Fantasy
Grades 7-9

In this introduction to the fantasy genre, students read and write stories set in immersive worlds of magic and mythical creatures. Discussions focus on literary elements such as the hero's journey, symbolism, and the struggle of good against evil.

Reading passages are taken from classic and modern fantasy series, including *The Fellowship of the Ring,* and *The Chronicles of Narnia: The Lion, The Witch, and the Wardrobe,* and others.

Elements of Style
Grades 7-9

Students learn how to "make every word tell" by practicing the principles of correct usage and effective English style. Lessons are based on Strunk and White's *The Elements of Style.*

Topics include rules of usage, principles of composition, matters of form, commonly misused expressions, writing for clarity, and key grammatical terms.

Students write daily passages in creative, academic, and persuasive styles, and receive detailed feedback from instructors.

MATHEMATICS

Fairfax Collegiate Math 3-4
Grades 3-4

Students learn, practice, and review key math concepts and skills.

Daily activities include small-group instruction and discussion, individual work, enrichment, and math games.

Fairfax Collegiate Math 3-4 topics include multiplication, division, fractions, decimals, geometry, probability, and estimation.

Math Fundamentals
Grades 3-4

Students develop core arithmetic skills. Lessons use hands-on manipulatives and models to reinforce concepts. They practice single- and multi-digit operations with individualized practice and small group activities.

This course is recommended for students who want additional support and strategies for the concepts they have learned in their regular math classroom.

Topics include whole number operations, fractions, and word problems.

Math Games
Grades 3-4

Students develop math skills and analytic thinking by playing games, solving logic puzzles, and completing small-group challenges. This is a hands-on course that emphasizes application of basic skills and problem-solving strategies in a fun, encouraging environment.

Games and activities include math mysteries, checkers, Smath (Math Scrabble), Sudoku, nonograms, mental math Olympics, Forbidden Island, Math 24, and other enrichment games.

Math and logic topics include arithmetic, mental math, basic game theory, spatial reasoning, and decision analysis.

Word Problems
Grades 3-4

Students review math concepts and learn techniques to solve single- and multi-step word problems.

This individualized course is appropriate for a range of students. Instructors use diagnostic test results to group students, design lessons, and assign problem sets.

Students work on different types of problems based on their current level. Topics include integer, decimal, fraction, percent, proportion, measurement, probability, statistics, algebra, and geometry problems.

Cryptography
Grades 5-6

Make and break secret codes using math! Students learn the historical evolution of cryptography in a hands-on exploration of real-world codes, including Caesar ciphers, substitution ciphers, Vigenère ciphers, and RSA encryption.

As a final project, students develop their own cryptosystem. Topics include modular arithmetic, factoring, inverse functions, exponents, and prime numbers.

Computer Math
Grades 5-6

Students learn to use educational technology to investigate math topics, run simulations, and solve challenging problems. Topics include introductory algebra, geometry, graphing, and statistics concepts.

Students use computer models to study real-world scenarios such as investing and projectile motion. Software includes Geogebra, Tinkerplots, and an online version of Mathematica.

Fairfax Collegiate Math 5-6
Grades 5-6

Students learn, practice, and review key math concepts and skills.

Daily activities include small-group instruction and discussion, individual work, enrichment, and math games.

Fairfax Collegiate Math 5-6 topics include fractions, decimals, pre-algebra, geometry, probability, statistics, and number theory.

Problem Solving
Grades 5-6

Students review and prepare for middle school math by learning and practicing strategies to solve word problems. The diagnostic test and math topics align with the Virginia Standards of Learning.

Problem solving topics include diagramming, visualization strategies, and common problem types. Math topics include pre-algebra, geometry, proportion, measurement, statistics, and probability.

Activities include discussion, daily practice, and Math Olympiad challenges.

Brain Games
Grades 5-6

Students develop logical and mathematical thinking by playing games, completing puzzles, and analyzing strategies. Games and puzzles include checkers, chess, Go, Monopoly, Hoshiwokokeru, Math 24, Stratego, Resistance, Rubik's cubes, and math enrichment games.

Math and logic topics include binary algebra, spatial reasoning, decision analysis, game theory, algorithms, basic economics, and mental math.

As a final project, students create their own mathematically balanced board games.

Intro to Pre-Algebra
Grades 6-8

Students prepare for Pre-Algebra by learning and reviewing basic algebraic concepts.

On the first day of this individualized course, students take diagnostic tests to help tailor personalized curricula.

The course begins with a review of arithmetic, fractions, exponents, and decimals. Students then learn how to simplify, solve, and graph algebraic equations.

Intro to Algebra
Grades 7-9

Students prepare for Algebra I by studying key pre-algebra and algebra concepts consistent with the Virginia SOLs.

This is an individualized course. Students complete a diagnostic test on the first day of class to identify their specific needs.

The sequence of topics includes negative numbers, variables, terms, expressions, equations, polynomials, rational numbers, rational expressions, and quadratics.

Intro to Geometry
Grades 7-9

This is an individualized course for students preparing for middle school and high school Geometry, with topics aligning with the Virginia SOLs.

Students complete a diagnostic test on the first day of class to identify specific needs.

The sequence of topics includes lines, segments, circles, squares, angles, parallel lines, triangles, and polygons.

Contest Math
Grades 7-9

Students work individually and in small groups to prepare for math competitions including the Mathematics Olympiad, MathCounts, AMC 8, and AMC 10.

Instructors group students based on students' goals and diagnostic test results. Students discuss concepts and strategies, solve and review problem sets, complete exams under simulated contest conditions, and work individually with instructors.

SCIENCE

Chemistry Concepts
Grades 3-4

Students perform experiments to learn about key chemistry concepts: matter, forces, heat, energy, phase changes, acids, bases, and reactions.

Students also learn important chemistry terminology and laboratory methods.

Students work in small groups. Instructors closely supervise students, and experiments are age-appropriate and use only non-hazardous chemicals and supplies.

Spy Science
Grades 3-4

Students learn the secrets of spying, sleuthing, and subterfuge. Hands-on activities help students hone their detective skills by teaching real life techniques used in information collection and undercover work.

Topics include fingerprint and handwriting analysis, chemical analysis, forgery identification, homemade spy gadgets and surveillance tools, encryption, and code breaking. Students conduct spy missions to integrate what they have learned throughout the course.

Human Biology & Anatomy
Grades 5-6

This course is an introduction to human physiology, focusing on four key organ systems: the cardiovascular system, the digestive system, the nervous system, and the skeletomuscular system.

Daily class activities include reading assignments, discussions, hands-on exercises, experiments, working with human skeleton and body anatomy models, and medical simulations. Students create life-sized posters of their organ systems.

Science Olympiad
Grades 3-4 & Grades 5-6

Students practice for the Science Olympiad (*http://www.soinc.org*), a nationwide competition with written and hands-on components.

Teams compete in events covering scientific knowledge, processes, and applications with an emphasis on teamwork and problem solving.

Practice event topics include earth sciences, physics, astronomy, biology, and chemistry.

Forensic Science
Grades 5-6 & Grades 7-9

This is a hands-on introduction to the science and laboratory techniques of law enforcement.

Lab topics include crime scenes, tool marks, chemical analysis, counterfeit documents, dental impressions, fiber identifications, fingerprints, glass fractures, handwriting analysis, forgeries, ink chromatography, shoe prints, forensic anthropology, blood splatter patterns, and DNA electrophoresis.

As a final project, each class attempts to solve a simulated crime using the forensic techniques learned.

Physics
Grades 5-6

This is a broad introduction to physics at a middle school level, including basic kinematics, optics, and electromagnetism.

Topics include force, work, motion, potential energy, kinetic energy, chemical energy, friction, electricity, magnetism, light, wave, and heat transfer.

Activities include constructing motors, batteries, and steam engines, performing experiments in optics and magnetism, and learning about kinematics and force using air tracks, pulleys, dynamics carts, and spring scales.

Genetics
Grades 7-9

This is a high school-level presentation of genetics for advanced middle school students.

Topics include Mendelian genetics, the cell, DNA, chromosomes, mutations, cancer, bacterial transformation, recombination, viruses, genetic engineering, transcription and translation, evolution, and the human genome.

Activities include readings and discussions, hands-on activities, demonstrations, short research papers, and student presentations.

Animal Physiology
Grades 7-9

Students learn about animal anatomy, physiology, and organ structures across a variety of taxonomies by completing dissections. They learn about major differences in physiology between different phyla and classes and discuss evolutionary adaptation.

Students complete a variety of laboratory dissections of preserved specimens, including owl pellets, annelids, frogs, rats, sheep brains, and dogfish sharks.

Topics include animal taxonomy, skeletal and organ structures, nervous, circulatory, and digestive systems, and convergent and divergent evolution.

Neuroscience
Grades 7-9

Students learn about the nervous system.

Topics include brain structure, motor control, neurons, neurotransmitters, action potentials, signal transduction, potentiation, memory, and neurodegenerative diseases.

Experiments include computer simulations, insect and human motor nerve signal measurement, and brain wave pattern observation and interpretation.

Lasers
Grades 7-9

Students learn about laser safety, properties, theory, and design through demonstrations and experiments.

Experiments cover fiber optics, reflection, refraction, holograms, and lasers as measurement tools. Topics include laser design, laser physics, types of lasers, and laser applications.

Laser projects include measuring refraction indices, navigating laser mazes, experimenting with fiber optics, and building spectroscopes.

This course uses only low-power, "eye-safe" lasers, and students wear safety goggles.

Newtonian Physics
Grades 7-9

This is a high-school level presentation of classical mechanics for students who are comfortable with basic algebra.

Topics include Newton's laws, kinematics, inertia, forces, energy, work, friction, vectors, velocity and acceleration.

Experiments explore distance, velocity, acceleration, and force using air tracks, dynamics carts, ballistic cars, pulleys, and spring scales.
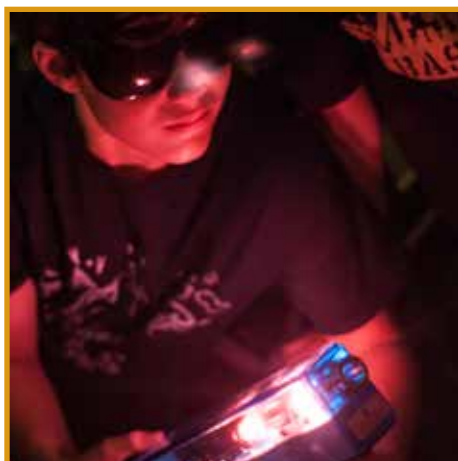
PUBLIC SPEAKING

Persuasive Speaking
Grades 3-4

Students practice developing and delivering skillful, thoughtful, well-reasoned arguments.

Topics are of direct relevance to students. Students argue both for and against each proposition.

Instructors emphasize mutual courtesy and careful listening.

Public Speaking
Grades 3-4

Students write and deliver short speeches and presentations on topics of their own choosing in a comfortable setting.

Instructors provide detailed individual suggestions for improving both content and delivery.

Students learn how to encourage each other and provide constructive feedback.

Elementary Debate
Grades 5-6

This course introduces elementary students to parliamentary debate.

Debate topics are both challenging and directly relevant to students. The rule structure is less rigid than standard parliamentary debate rules.

Group exercises develop public speaking, critical reasoning, argument construction, rebuttal, and evidence presentation skills.

Speech
Grades 5-6

Students deliver written, extemporaneous, and impromptu speeches.

Instructors critique voice inflection, eye contact, body language, gestures, word choice, visual aids, and tone.

The first week features daily speech exercises. Students research, write, and rehearse individual speeches the second week.

Middle School Debate
Grades 7-9

This course is based on the Middle School Public Debate Program (*http://www.middleschooldebate.com*).

Students learn and practice formal debate rules, public speaking skills, research techniques for debate, and argument based on reasoning and evidence.

Debate topics include a variety of local, national, and global issues.

Mock Trial
Grades 7-9

Students take on courthouse roles such as attorneys, witnesses, and jurors in a mock trial presided over by an instructor-judge.

Mock trial activities include selecting jurors, delivering opening statements, examining witnesses, presenting evidence, making closing arguments, and deliberating verdicts.

Classroom discussions address the role of courts, the meaning of "due process," the nature of justice, the differences between civil and criminal trials, and the prosecution's burden of proving guilt beyond a reasonable doubt.

Model U.N.
Grades 7-9

Students assume the roles of ambassadors to the U.N. Security Council and work together to resolve international disputes. Students develop critical thinking, negotiating, public speaking, debating, and writing skills.

Topics include the United Nations, the U.N. Security Council, U.N. rules and procedures, speech-making, negotiating, caucusing, and drafting resolutions.

This course is based on the Peacekeeping Global Classrooms Curriculum published by the United Nations Association of the U.S.A. (*http://www.unausa.org*).

TEST PREP

T.J. Exam Prep
Grades 7-8

Middle school students prepare for the **new** Thomas Jefferson High School Admissions Exam announced on March 17, 2017.

This course covers the ACT Aspire reading and science sections, the Quant Q math test, and the T.J. SIS Essay.

Review materials include Fairfax Collegiate's completely revised T.J. Exam Prep manual and *The Official ACT Prep Guide*.

Each student receives an evaluation detailing areas for improvement.

Loudoun AOS Prep
Grades 7-9

Students learn about the Loudoun Academy of Science (AOS) and the AOS admissions process.

Students prepare for the PSAT, the standardized test required for AOS admission. They also prepare for the AOS timed writing sample.

This course uses *Strategies and Practice for the NEW PSAT/NMSQT* and covers all three sections of the PSAT. Students practice on actual PSAT exams under timed conditions.

T.J. SIS Essay Prep
Grades 7-8

Students prepare for the Student Information Sheet (SIS) portion of the admissions process for Thomas Jefferson High School for Science and Technology (TJHSST).

Students write daily timed essays. Instructors provide detailed suggestions for improvement of grammar, mechanics, organization, and ideas.

Topics include exam essay strategies, essay organization, essay scoring, essay planning, essay prompts, topic sentences, supporting arguments, and grammar. The course also explores the TJHSST admissions process from the student and school perspectives.

PSAT/SAT Prep
Grades 7-9

Students prepare for the math, reading, and writing sections of the PSAT and SAT. The course text is *The Official SAT Study Guide*, published by the College Board.

The math review includes numbers and operations, algebra and functions, geometry and measurement, data analysis, statistics, and probability. The reading review emphasizes vocabulary, sentence completion, and reading comprehension questions.

Students complete one actual PSAT and three actual SAT exams under timed conditions. They become familiar with question formats, test scoring, and time-management strategies.
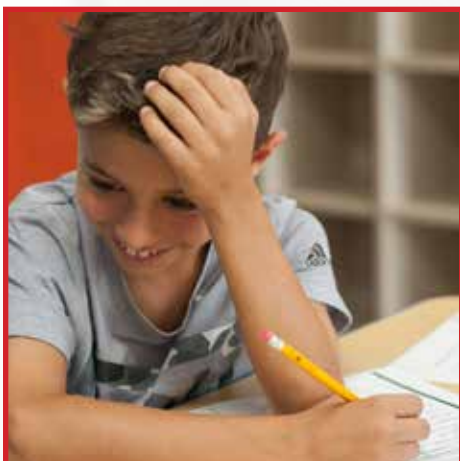
ENGINEERING

Intro to Engineering
Grades 3-4

Students explore engineering through hands-on activities focusing on the six classical simple machines: lever, wheel and axle, pulley, ramp, wedge, and screw.

Students also investigate the branches of engineering, practice the engineering design process, and learn about force, motion, and energy.

Space Exploration
Grades 3-4

Students investigate the fundamentals of astronomy and space travel by performing experiments, completing hands-on projects, and running computer simulations.

Students explore the scientific and engineering principles behind space suits and rocketry, the phases of the moon, telescopes, rovers, and zero-gravity equipment. They build model vehicles and spacecraft, including a water pressure-powered rocket. Other activities include planning and simulating space missions, inventing constellations, and using planetarium software to explore the night's sky and locate stars and planets.

Intro to Raspberry Pi
Grades 3-4

The Raspberry Pi is a tiny, cheap, powerful, and flexible computer system that allows students to explore the basics of computer hardware and programming.

Students use Raspberry Pi computers and attached devices to create digital music, capture pictures and videos, and write simple Python programs, including programs that interface with the computer game Minecraft.

Construction Engineering
Grades 3-4

Students learn principles of architecture, construction, and physics while building 3D structures.

Students complete design challenges using Lego, Erector sets, K'NEX, and unit blocks. Challenges include constructing structures of specified height, support capacity, or spanning distance. Physics topics include material density, center of gravity, and force diagrams.

Intro to Arduino
Grades 5-6

Students explore Arduino (*http://www.arduino.cc*), an open-source electronics platform known for its simplicity and ease of use.

Projects include a digital lockbox, an audio visualizer, and a digital multimeter.

Siege Engines
Grades 5-6

Students explore physics and engineering in a historical context by building models of medieval siege engines.

Students construct and operate classroom-safe miniature catapults, ballistae, onagers, trebuchets, and other ancient artillery engines. They learn the application of geometry and physics in their designs. For a final project, students participate in launch-distance competitions.

Engineering topics include simple machines, tension, torque, two-dimensional kinematics, and the design process.

Civil Engineering
Grades 5-6

Students explore engineering concepts by building models of bridges, skyscrapers, roller coasters, and other architecture and construction projects. Projects are built from K'NEX model kits as well as from scratch. As a final project, students design and build their own building.

Topics include Newton's laws, energy, force, and motion physics. Activities include weight capacity competitions, roller coaster loop design, and other engineering challenges.
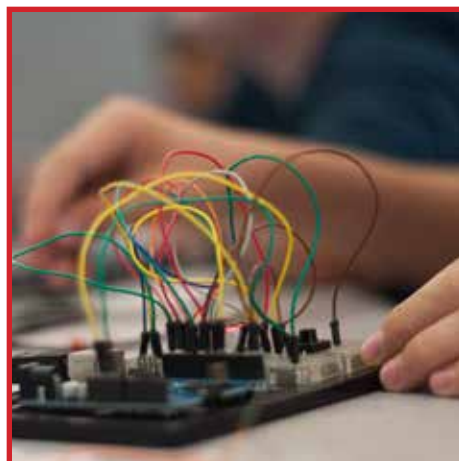
Raspberry Pi Projects
Grades 5-6

Students explore the basics of computer engineering and programming by configuring, customizing, and using Raspberry Pi computer systems in the context of electronics and programming challenges.

Projects include building a video game controller, creating a security camera, plotting a virtual city map, programming a "flying birds" game, and installing and using a Linux distribution.

Prototyping and 3D Printing
Grades 5-6

Using a Makerbot 3D printer, students plan, design, fabricate, assemble, and refine solutions to real-world challenges and problems. Students learn to operate the Makerbot Replicator 2 and Digitizer, create a productive makerspace, and develop a tinkerer's mindset.

Students undertake design challenges and iteratively plan, build, and test solutions to the problem. As a final project, students work in groups to create a prototype for a device of their own design.

Inventing and 3D Printing
Grades 7-9

Students learn to design and test their own inventions using 3D printing and other fabrication techniques. They operate the Makerbot Replicator 2 to 3D print objects of their own design, pitch their invention ideas to small groups, and iterate on design ideas.

Students also learn to use computer-assisted design software tools to create their invention blueprints. They generate models using the Makerbot Digitizer 3D scanner. For final projects, they print designs and create prototypes of their inventions to take home.

Arduino Engineering
Grades 7-9

Middle school students explore electronics, computers, and programming by building projects with Arduino (*http://www.arduino.cc*).

Projects include LED Dice, a binary counter, a Morse code translator, a lie detector, and a motion-sensing alarm.

Consistent with the Arduino philosophy of learning by tinkering and rapid prototyping, students also develop their own projects by interfacing "electronic junk" to Arduino circuit boards.

Raspberry Pi Engineering
Grades 7-9

Students use Raspberry Pi computers to build embedded computing projects and explore computer hardware. This course combines computer engineering, electronics, and programming,

Students build their own homebrew arcade game cabinets, security cameras, and GPS trackers, and learn about input, output, processing, basic Python programming, and storage.

Biomedical Engineering
Grades 7-9

Students apply engineering principles to physiology and medicine, developing understanding through classroom demonstrations, discussions, and experiments. They also propose and prototype medical equipment, prostheses, and artificial organs using 3D printers, computer simulations, and traditional modeling materials.

Projects introduce basic concepts of biochemistry, cell physiology, cell cycles, cell division, DNA structure and synthesis, protein synthesis and gene expression, tissue structure, human anatomy, and genetic engineering.

ROBOTICS

Intro to Robotics
Grades 3-4

This course for younger students emphasizes robot assembly and simple programming.

Students construct stationary and mobile robots using the entire LEGO Mindstorms NXT component set.

There is a introduction to programming using the graphical NXT-G language.

Robotics Zoo
Grades 3-4

Robotics Zoo combines biology and robotics. Students model real and imaginary animals using LEGO Mindstorms NXT robots.

Students build robotic representations of spiders, frogs, elephants, and stegosaurus, and program robots using NXT-G to mimic animal behaviors.

For the final project, students imagine a new life form and build a robotic representation.

Robots in Space
Grades 3-4

Students learn about the use of robots in space travel, and build spaceships, rovers, and autonomous vehicles using LEGO Mindstorms NXT robotics kits.

Projects include MarsRoverBot, SpaceDiverBot, ShuttleBot, LunarBot, and SpaceMinerBot.

Construction Robots
Grades 3-4

This course integrates robotics, architecture, and construction engineering.

Students design, build, program, and operate LEGO Mindstorms NXT construction-themed robots including machine tools, HammerBot, ForkliftBot, and WreckingBallBot. Advanced students complete vehicle robots including BackhoeBot and BucketBot.

EV3 Robotics Olympiad
Grades 5-6

This course introduces students to competitive EV3 robotics.

EV3 Robotics Olympiad events include races, obstacle courses, mazes, weight lifting challenges, and robot soccer.

Working in pairs, students design, build, program, and "coach" LEGO Mindstorms EV3 robots for each event.
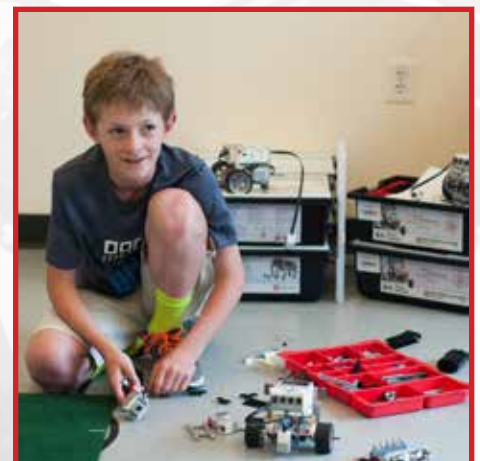
EV3 Mobile Robotics
Grades 5-6

Students assemble and program mobile LEGO Mindstorms EV3 robots.

Topics include motors, gear ratios, measurement, navigation, path planning, and obstacle avoidance. This course emphasizes EV3 programming.

EV3 Robots include Taskbot, DragRacerBot, REMBot, and MazeBot.

Intro to VEX Robotics
Grades 5-6

Students take their first steps into the world of competitive robotics in this beginner-friendly introduction to the VEX IQ Robotics platform. VEX (www.vexrobotics.com) is the largest robotics competition in the world.

Students work through the VEX IQ Robotics Camp Handbook and become familiar with key VEX subsystems: structure, motion, power, sensor, control, logic, and programming.

EV3 Robotics Engineering
Grades 5-6

Students use the EV3 Robotics platform to learn about the engineering process, project management, problem solving, and teamwork.

Projects include guided investigations and exploratory activities. Students build a mining robot, a patrol robot, and a tree measurer robot.

Students keep engineering journals, and deliver project proposals, design reviews, and project solution demonstrations.

EV3 Robotics Combat
Grades 7-9

Students construct EV3 combat robots and battle in robotic gladiator tournaments.

Competitions include remote control and pure artificial intelligence contests in robot vs robot battles.

Students use the LEGO EV3 programming language and conventional EV3 sensors, motors, and appendages. Advanced students learn LEGO EV3 RobotC programming and create custom sensors and battle attachments.

EV3 Robotic Vehicles
Grades 7-9

This course explores the new EV3 motors, sensors, remote controllers, and programming capabilities.

Students explore different methods of mobility utilizing wheels, treads, bipedal and tripedal designs to learn about mechanical and digital transmissions, static equilibrium, gear ratios, and sensory feedback.

Students work through the *The Lego Mindstorms EV3 Laboratory* to build WatchGooz3, Rov3r, Sup3rcar, and Sentin31 robots.

VEX IQ Challenge
Grades 7-9

Each year, VEX Robotics organizes a global tournament series known as the VEX IQ Challenge (http://www.vexrobotics.com/competition). The tournament, which only elementary and middle school students may compete in, has a predetermined theme and set of rules.

In this course, students tackle the VEX IQ Challenge project for the current school year. Although we do not enter into the official competition, students gain valuable experience and insight into the competitive process that they can carry with them into a school or community team.

EV3 Competitive Robotics
Grades 7-9

This course focuses on programming the new EV3 Intelligent Brick, which is orders of magnitude more powerful than the legacy NXT Intelligent Brick.

Students build and program EV3 robots to compete in complex solo challenges. Projects include Segway Bot, SoccerBot, and SniperBot.

PROGRAMMING

Scratch with WeDo
Grades 3-4

Scratch (*http://scratch.mit.edu*) provides a fun and engaging introduction to programming. Students snap graphical blocks together to create scripts that control media such as graphics, photos, and sound. Scratch software integrates with LEGO WeDo robotics hardware, allowing students to manipulate animations with physical sensor input.

Activities include playing with sample projects and creating original projects with the assistance of instructors.

Alice: Creating 3D Worlds
Grades 5-6

Alice (*http://www.alice.org*) is an object-oriented, 3D programming environment developed at Carnegie Mellon University. This is an introduction to Alice and emphasizes creativity and technology.

Students use Alice to build 3D storybook worlds and to control advanced interactions and animations of 3D models, using basic conditional programming.

Topics include objects, events, logic, control structures, and orienting and moving 3D images.

GameMaker: Studio
Grades 5-6

Students learn object-oriented programming by designing, creating, and debugging games with GameMaker: Studio *(http://www.yoyogames.com)*. Students create and script worlds, objects, graphics, and sounds.

Topics include objects, loops, variables, conditions, collision detection, scope, pathfinding, physics, and data structures.

Students create multi-platform games for their final projects.

Android Programming
Grades 5-6

Students create games for Android tablets and smartphones using the beginner-friendly MIT App Inventor (http://appinventor.mit.edu/) programming environment.

Traditional programming concepts such as variables, control structures, and graphics are combined with the tablet touchscreen to enable students to build a wide variety of projects such as reaction, memory, and painting games.

At the end of the course, students bring home their projects for installation on current-generation Android devices.

JavaScript
Grades 5-6

Students learn the foundations of programming and logical thinking by writing programs and simple games in JavaScript. This primer is geared towards ambitious students with no previous coding experience.

Topics include variables, computer math, input and output, arrays, loops, graphics, and functions. Students write a game and design its graphics as a final project.

Greenfoot Java
Grades 5-6

Students learn the basics of object-oriented programming and the Java programming language in Greenfoot (*http://www.greenfoot.org*), a student-friendly programming interface.

Topics include variables, computer math, control structures, classes, methods, inheritance, abstraction, and polymorphism. Activities include ecosystem simulations and simple games.

As final projects, students design, program, and publish their own games and simulations.

Game Programming
Grades 7-9

Students write games using BlitzPlus (*http://www.blitzbasic.com*).

Topics include variables, control structures, loops, functions, arrays, types, programming style, and graphics.

Students create, move, scale, and rotate images and shapes. They work individually or in pairs and write a simple game as the final project.

Android App Development
Grades 7-9

Using an enhanced version of MIT App Inventor, students create apps that utilize more advanced capabilities of Android tablets and smartphones.

Projects integrate accelerometers, barcode and QR code scanners, location services, and Bluetooth connectivity. The course emphasizes both technical skills and concepts of user interface design.

At the end of the course, students bring home their projects for installation on current-generation Android devices.

Small Java
Grades 7-9

Small Java prepares students for Java-based high school computer science.

Topics include constants, types, variables, operators, expressions, the main() method, String objects, simple classes, member methods, conditions, loops, String manipulation, parameters, variable scope, console programs vs. GUI programs, and practice projects. The course uses the BlueJ IDE (*http://www. bluej.org*).

JavaScript and JQuery
Grades 7-9

Student learn the JavaScript language and how to use JavaScript and the jQuery library to write scripts for web pages.

Topics include JavaScript variables, control structures, objects, functions, and the JavaScript debugger. Students learn how to use the jQuery library to select and modify DOM elements. They also explore functional programming concepts including functions as first-class objects, closures, and callbacks.

Projects include simple games and animated web pages written in JavaScript.

3D Indie Games
Grades 7-9

Indie games are created by small teams or individuals working outside of the established game studios.

In this course students design and program 3D games using Unity 5, a popular indie game development tool.

Topics include scripting, graphics, objects, terrain, and levels. Students use open source digital assets and also create their own graphics and sounds.

As a final project, students design and create their own multi-platform games.

Python on Linux
Grades 7-9

This is an introduction to programming and open source software using the Python programming language.

Python topics include variables, control structures, arrays, functions, and classes. Students learn how to use the Linux command line to manage files, run Python programs, and create shell scripts.

Projects include simple command line utilities and text-based games. Students also download, experiment with, and examine the code of an open source Python project of their choosing.

ART AND DESIGN

Drawing
Grades 3-4 & Grades 5-6

This is a course for beginners and teaches drawing as a foundation for all forms of visual expression.

Topics include sketches, shapes, angles, perspective, horizon, vanishing points, reflections, contrast, shadows, light effects, and composition.

Exercises include still life drawings, portraits, landscapes, and cartoons.

Materials are provided and include specialized pencils, sketch pads, drawing boards, and drawing tools.

Painting
Grades 3-4 & Grades 5-6

This course introduces both tempera and watercolor painting.

Activities include structural drawings, value sketches, one-color paintings, three-color paintings, and tempera paintings.

Materials are provided and include student-grade paints, brushes, palettes, a variety of paper, and assorted tools.

Digital Design
Grades 3-4

Students explore universal design principles by creating digital art in a variety of media.

Design topics include composition, exposure, colors, contrast, and vector and raster images.

Activities include digital photography, image editing, digital illustration, digital music creation, and game design exercises.

For a final project, students customize Minecraft, a popular computer game, with their own original digital art.

Graphic Design
Grades 5-6

Students learn how to execute sophisticated single-page design projects using universal design principles, layout pads, and Adobe Photoshop Elements.

Design topics include space, grouping, alignment, emphasis, grids, color theory, typography, and digital images.

Projects include store signs, menus, banners, posters, and advertisements.

Architectural Design
Grades 5-6

Students learn about architecture and about Google SketchUp, a free digital drafting software package.

Architecture topics include the history of residential architecture, international housing styles, and form and function in residential design.

Students practice 2D drafting and 3D modeling. As a final project, each student creates and presents his or her "dream house" using Google SketchUp.

HTML5 Web Pages
Grades 5-6

Students learn HTML5 and create their own web pages.

Topics include the structure of a web page, HTML tags, HTML attributes, hyperlinks, CSS styles, and HTML5 elements and attributes.

Students use digital cameras, Paint.NET, and GIMP to create images for the web.

As a final project, each student creates and publishes a small website.

Fashion Design
Grades 7-9

Students design their own clothing and accessories using both traditional and digital techniques.

The first week, students learn basic principles of hand-drawn fashion design, including drawing strokes, color balance, texture, croquis, garment and accessory categorization, poses, and historical trends. They use light boxes and art supplies to create designs using both hand-drawn figures and premade templates.

The second week, students apply these concepts and skills using the vector-drawing program InkScape. They use layers, colors, shapes, and shading to create a virtual fashion line. As a final project, students assemble their designs into a portfolio.

Photography
Grades 7-9

Students learn digital SLR photography starting with basic camera operation.

Subjects include plants and flowers, food, portraits, products, sports and action, and architecture.

Exercises emphasize exposure, composition, color, and lighting. Students achieve artistic effects by manually controlling the components of exposure: aperture, shutter speed, and ISO.

The Summer Program provides Canon EOS DSLR cameras for students to use.

HTML5 Web Design
Grades 7-9

Students learn basic web design principles and write and style web pages using HTML5 and CSS.

Design topics include colors, alignment, contrast, fonts, images, white space, navigation, and usability.

Students learn to import and embed CSS and media files. They experiment with new HTML5 features, and author pages using open source tools: Notepad++ and GIMP. For a final project, each student creates and publishes a small website.

Game Design and Modding
Grades 7-9

Students "mod" (customize) commercial video games with their own graphics, sounds, unit definitions, maps, and scripts.

The first week students mod the strategy game Civilization IV by inventing new units and technologies, and by altering combat rules and map generation logic.

The second week, students create modules for the 3D physics sandbox Garry's Mod, designing objects, levels, environments, obstacle courses, and minigames.

Role-Playing Game Design
Grades 7-9

Students design their own role-playing games using RPG Maker VX Ace.

Instruction emphasizes crafting visual, audio, and storytelling components to create compelling adventures.

Topics include scripting, data management, game balancing, storytelling, graphic design, sprites and tilesets, and the design process. Students share and publish their projects.
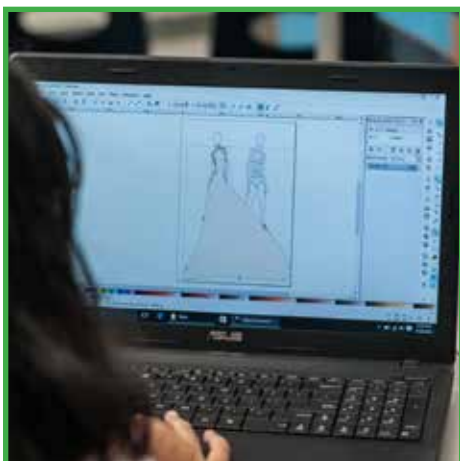
MINECRAFT

Minecraft Exploration
Grades 3-4

Turn Minecraft into an educational experience this summer! This course guides beginners and skilled players alike through a diverse range of experiences that challenge them to experiment, think, and work cooperatively to tackle a wide variety of scenarios with their classmates.

Students learn how to install and run Minecraft mods, set up and join a curated private server, customize graphics and gameplay, compose digital music, learn engineering and programming concepts through the use of redstone circuits and the ComputerCraft mod, and much more.

Minecraft Modding
Grades 3-4

Using programming and design utilities, students create mods for the immensely popular computer game Minecraft. Students use MCreator (*http://mcreator. pylo.si/*) to design, build, and test their own custom mods.

Topics include using mods to create new blocks, items, creatures, environments, achievements, triggers, and events. As a final project, students design and code their own fully functional Minecraft mods, and export them to use at home with Minecraft Forge.

Minecraft and Python
Grades 5-6

Students use their experiences with the computer game Minecraft as a gateway to learn the fundamentals of the Python programming langauge.

Topics such as variable types, conditional statements, loops, collections, and algorithms are be introduced in the first week as tools that help students complete exciting projects such as building massive structures and cities with a single command. In the second week, students learn to use game programming concepts to build customized Minecraft minigames.

Minecraft RPG Design
Grades 5-6

In this course, students unleash their creativity to build a complete Minecraft role-playing game world from scratch. Instruction focuses on immersive world design and storytelling as well as the required technical skills.

Using MCreator and other tools for support, projects include components such as custom NPCs, dialog trees, quests, new tools and items, and custom skins and models for characters and enemies.

Students take their projects home for use with Minecraft Forge.

FILMMAKING

Filmmaking
Grades 3-4 & Grades 5-6

Students learn how to plan, write, shoot, edit and complete post-production for digital video short films.

With the guidance of instructors, students brainstorm ideas for a short film, write an original script, and create a shot list and storyboard.

Students shoot their film using a tripod, a Panasonic DVX-100B video camera, a boom microphone, and (optionally) a lighting kit.

Students edit their film using iMovie, add music and credits, complete post-production, and export the film to a private Vimeo account for home viewing.

Stop-Motion Animation
Grades 3-4 & Grades 5-6

Students use still cameras, audio recorders, and iMovie to create stop-motion animation films. These can be narrative (scripted) or experimental videos created from LEGO blocks, modeling clay, action figures, and other "found objects".

This introductory course covers the basics of using household objects and miniature construction to create a compelling story. The course provides an overview of photography, sound recording, and video editing as part of the filmmaking process.

Digital Animation
Grades 5-6

This course teaches basic animation techniques using Blender animation software.

Students model objects and characters using 'Nurbs', rig characters for movement, light scenes, apply textures and colors to models, and animate models.

Final projects include animated 3D characters and 3D environments.

Video Production
Grades 7-9

Students shoot and complete rough edits of films based on scripts from script-writing classes and other sources.

The course begins with readings and exercises that cover working with actors, script analysis, storyboarding and shot listing, location scouting, camera operation, lighting, and sound technique.

The majority of the course is devoted to group production of a short DV film.

Students export rough edits to private Vimeo accounts for home viewing.

Web Video
Grades 7-9

Students plan, write, edit, and share a variety of genres of web video including parodies, advertorials, product reviews, vlogs, and tutorials.

Production concepts include location scouting, interviewing, B-roll footage, green screen effects, incorporating digital images and screenshots, and multi-cam setups.

Production equipment includes DSLR cameras, simple lighting kits and on-camera lights, audio recorders, and stick, shotgun, and lavaliere microphones. Students use Adobe Premiere Elements to edit and optionally upload videos to personal Vimeo, YouTube, Facebook, and Twitter accounts.

ALEXANDRIA AND FALLS CHURCH SCHEDULES

Alexandria^{D‡}: Beth El Hebrew Congregation, 3830 Seminary Rd., Alexandria, VA 22304

Session II: Jul 3-Jul 14	Session III: Jul 17-Jul 28	Session IV: Jul 31-Aug 11	Session V: Aug 14-Aug 25
Morning	**Morning**	**Morning**	**Morning**
Reading Reinforcement 3-4	Word Problems 3-4	Reading Reinforcement 3-4	Fairfax Collegiate Math 3-4
Intro to Robotics 3-4	Robots in Space 3-4	Robotics Zoo 3-4	Intro to Raspberry Pi 3-4
Filmmaking 3-4	Stop-Motion Animation 3-4	Painting 3-4	Minecraft Modding 3-4
Brain Games 5-6	Elementary Debate 5-6	Cryptography 5-6	Writing Skills & Grammar 5-6
Speech 5-6	Writing Skills & Grammar 5-6	Speech 5-6	EV3 Mobile Robotics 5-6
Siege Engines 5-6	Android Programming 5-6	Forensic Science 5-6	Drawing 5-6
Writers' Workshop 7-9	T.J. SIS Essay Prep 7-8	High School Writing 7-9	Intro to Algebra 7-9
Newtonian Physics 7-9	Intro to Algebra 7-9	Game Programming 7-9	Middle School Debate 7-9
Photography 7-9	Game Design & Modding 7-9	Role-Playing Game Design 7-9	Genetics 7-9
Afternoon	**Afternoon**	**Afternoon**	**Afternoon**
Fairfax Collegiate Math 3-4	Writing Fundamentals 3-4	Math Games 3-4	Writing Fundamentals 3-4
Persuasive Speaking 3-4	Intro to Engineering 3-4	Scratch with WeDo 3-4	Construction Robots 3-4
Spy Science 3-4	Minecraft Modding 3-4	Digital Design 3-4	Drawing 3-4
Strategic Reading 5-6	Fairfax Collegiate Math 5-6	Painting 5-6	Brain Games 5-6
EV3 Robotics Engineering 5-6	EV3 Robotics Olympiad 5-6	Creative Writing 5-6	Elementary Debate 5-6
Filmmaking 5-6	Stop-Motion Animation 5-6	EV3 Robotics Engineering 5-6	Minecraft and Python 5-6
Intro to Pre-Algebra 6-8	Elements of Style 7-9	Intro to Geometry 7-9	Writers' Workshop 7-9
PSAT/SAT Prep 7-9	Small Java 7-9	Mock Trial 7-9	Small Java 7-9
Raspberry Pi Engineering 7-9	T.J. Exam Prep 7-8	Forensic Science 7-9	PSAT/SAT Prep 7-9

Falls Church: St. Katherine Greek Orthodox Church, 3149 Glen Carlyn Rd., Falls Church, VA 22041

Session II: Jul 3-Jul 14	Session III: Jul 17-Jul 28	Session IV: Jul 31-Aug 11	Session V: Aug 14-Aug 25
Morning	**Morning**	**Morning**	**Morning**
Writing Skills & Grammar 5-6	Problem Solving 5-6	Strategic Reading 5-6	Fairfax Collegiate Math 5-6
EV3 Mobile Robotics 5-6	Speech 5-6	Gamemaker: Studio 5-6	Forensic Science 5-6
Gamemaker: Studio 5-6	Science Olympiad 5-6	Civil Engineering 5-6	Siege Engines 5-6
Intro to Algebra 7-9	Reading for Meaning 7-9	Intro to Algebra 7-9	Reading for Meaning 7-9
Middle School Debate 7-9	Game Programming 7-9	T.J. Exam Prep 7-8	EV3 Robotics Combat 7-9
Neuroscience 7-9	Video Production 7-9	Web Video 7-9	T.J. Exam Prep 7-8
Afternoon	**Afternoon**	**Afternoon**	**Afternoon**
Fairfax Collegiate Math 5-6	Creative Writing 5-6	Computer Math 5-6	Writing Seminar 5-6
Elementary Debate 5-6	Greenfoot Java 5-6	Human Biology & Anatomy 5-6	Alice: Creating 3D Worlds 5-6
Minecraft RPG Design 5-6	Filmmaking 5-6	Filmmaking 5-6	Architectural Design 5-6
High School Writing 7-9	T.J. SIS Essay Prep 7-8	Writers' Workshop 7-9	T.J. SIS Essay Prep 7-8
EV3 Competitive Robotics 7-9	Intro to Geometry 7-9	Middle School Debate 7-9	Intro to Geometry 7-9
T.J. Exam Prep 7-8	Animal Physiology 7-9	Android App Development 7-9	Biomedical Engineering 7-9

MCLEAN AND VIENNA SCHEDULES

McLean: Redeemer Lutheran Church, 1545 Chain Bridge Rd., McLean, VA 22101

Session I: Jun 26-Jun 30

Morning
Fairfax Collegiate Math 5-6
Speech 5-6
Alice- Creating 3D Worlds 5-6
Human Biology & Anatomy 5-6
TJ SIS Essay Prep 7-8
Reading for Meaning 7-9
EV3 Robotics Combat 7-9
Web Video 7-9

Afternoon
Writing Skills & Grammar 5-6
EV3 Mobile Robotics 5-6
Filmmaking 5-6
Civil Engineering 5-6
Intro to Algebra 7-9
Middle School Debate 7-9
Game Programming 7-9
Genetics 7-9

Session II: Jul 3-Jul 14

Morning
Computer Math 5-6
Elementary Debate 5-6
Android Programming 5-6
Forensic Science 5-6
Writers' Workshop 7-9
VEX IQ Challenge 7-9
Video Production 7-9
Biomedical Engineering 7-9

Afternoon
Creative Writing 5-6
EV3 Robotics Engineering 5-6
Filmmaking 5-6
Prototyping and 3D Printing 5-6
Intro to Geometry 7-9
Model U.N. 7-9
Python on Linux 7-9
Forensic Science 7-9

Session III: Jul 17-Jul 28

Morning
The Writing Process 5-6
EV3 Mobile Robotics 5-6
Digital Animation 5-6
Minecraft RPG Design 5-6
Intro to Algebra 7-9
Small Java 7-9
Lasers 7-9
T.J. Exam Prep 7-8

Afternoon
Brain Games 5-6
Javascript 5-6
Physics 5-6
Raspberry Pi Projects 5-6
Epic Fantasy 7-9
Middle School Debate 7-9
EV3 Robotics Combat 7-9
Fashion Design 7-9

Session IV: Jul 31-Aug 11

Morning
Fairfax Collegiate Math 5-6
Android Programming 5-6
Forensic Science 5-6
Prototyping & 3D Printing 5-6
High School Writing 7-9
EV3 Robotic Vehicles 7-9
PSAT/SAT Prep 7-9
Photography 7-9

Afternoon
Writing Seminar 5-6
Elementary Debate 5-6
Intro to VEX Robotics 5-6
Graphic Design 5-6
Intro to Geometry 7-9
Javascript and JQuery 7-9
Forensic Science 7-9
Inventing & 3D Printing 7-9

Session V: Aug 14-Aug 25

Morning
Strategic Reading 5-6
EV3 Mobile Robotics 5-6
Filmmaking 5-6
Raspberry Pi Projects 5-6
Intro to Pre-Algebra 6-8
T.J. SIS Essay Prep 7-8
Small Java 7-9
Newtonian Physics 7-9

Afternoon
Problem Solving 5-6
Greenfoot Java 5-6
Science Olympiad 5-6
Minecraft RPG Design 5-6
Writers' Workshop 7-9
VEX IQ Challenge 7-9
T.J. Exam Prep 7-8
Video Production 7-9

Vienna: Green Hedges School, 415 Windover Ave. NW, Vienna, VA 22180

Session I: Jun 26-Jun 30

Morning
Writing Fundamentals 3-4
Robotics Zoo 3-4
Space Exploration 3-4
Minecraft Modding 3-4
Brain Games 5-6
Science Olympiad 5-6
Stop-Motion Animation 5-6
Siege Engines 5-6

Afternoon
Math Games 3-4
Chemistry Concepts 3-4
Stop-Motion Animation 3-4
Intro to Raspberry Pi 3-4
Writing Seminar 5-6
Elementary Debate 5-6
EV3 Robotics Engineering 5-6
Graphic Design 5-6

Session II: Jul 3-Jul 14

Morning
Fairfax Collegiate Math 3-4
Science Olympiad 3-4
Drawing 3-4
Intro to Engineering 3-4
The Writing Process 5-6
EV3 Mobile Robotics 5-6
Physics 5-6
Architectural Design 5-6

Afternoon
Writing and Revising 3-4
Robotics Zoo 3-4
Spy Science 3-4
Minecraft Exploration 3-4
Fairfax Collegiate Math 5-6
Gamemaker: Studio 5-6
Drawing 5-6
Intro to Arduino 5-6

Session III: Jul 17-Jul 28

Morning
Writing Fundamentals 3-4
Public Speaking 3-4
Intro to Robotics 3-4
Space Exploration 3-4
Painting 5-6
Cryptography 5-6
Greenfoot Java 5-6
Civil Engineering 5-6

Afternoon
Word Problems 3-4
Chemistry Concepts 3-4
Painting 3-4
Construction Engineering 3-4
Writing Skills & Grammar 5-6
EV3 Robotics Olympiad 5-6
Human Biology & Anatomy 5-6
Minecraft and Python 5-6

Session IV: Jul 31-Aug 11

Morning
Fairfax Collegiate Math 3-4
Spy Science 3-4
Filmmaking 3-4
Intro to Raspberry Pi 3-4
Strategic Reading 5-6
EV3 Robotics Engineering 5-6
Science Olympiad 5-6
Stop-Motion Animation 5-6

Afternoon
Reading Reinforcement 3-4
Robots in Space 3-4
Science Olympiad 3-4
Minecraft Exploration 3-4
Problem Solving 5-6
Alice: Creating 3D Worlds 5-6
Filmmaking 5-6
Raspberry Pi Projects 5-6

OAKTON AND FAIRFAX SCHEDULES

Oakton: Pinnacle Academy, 2854 Hunter Mill Rd., Oakton, VA 22124

Session II: Jul 3-Jul 14	Session III: Jul 17-Jul 28	Session IV: Jul 31-Aug 11	Session V: Aug 14-Aug 25
Morning	**Morning**	**Morning**	**Morning**
Problem Solving 5-6	Creative Writing 5-6	Problem Solving 5-6	Creative Writing 5-6
Speech 5-6	EV3 Robotics Engineering 5-6	Speech 5-6	Intro to VEX Robotics 5-6
Android Programming 5-6	Filmmaking 5-6	Gamemaker: Studio 5-6	Architectural Design 5-6
T.J. SIS Essay Prep 7-8	Intro to Geometry 7-9	Elements of Style 7-9	Intro to Algebra 7-9
High School Writing 7-9	Python on Linux 7-9	VEX IQ Challenge 7-9	Middle School Debate 7-9
Animal Physiology 7-9	Forensic Science 7-9	T.J. Exam Prep 7-8	Game Programming 7-9
HTML5 Web Design 7-9	PSAT/SAT Prep 7-9	Arduino Engineering 7-9	Photography 7-9
Afternoon	**Afternoon**	**Afternoon**	**Afternoon**
Writing Skills and Grammar 5-6	Fairfax Collegiate Math 5-6	Writing Skills and Grammar 5-6	Fairfax Collegiate Math 5-6
Intro to VEX Robotics 5-6	Elementary Debate 5-6	EV3 Mobile Robotics 5-6	Elementary Debate 5-6
Digital Animation 5-6	Javascript 5-6	Graphic Design 5-6	Android Programming 5-6
Intro to Algebra 7-9	Writers' Workshop 7-9	Intro to Pre-Algebra 6-8	High School Writing 7-9
Game Programming 7-9	EV3 Competitive Robotics 7-9	Mock Trial 7-9	EV3 Robotics Combat 7-9
Genetics 7-9	Video Production 7-9	3D Indie Games 7-9	T.J. Exam Prep 7-8
T.J. Exam Prep 7-8	Raspberry Pi Engineering 7-9	Neuroscience 7-9	Game Design & Modding 7-9

FairfaxD: Gesher Jewish Day School, 4800 Mattie Moore Ct., Fairfax, VA 22030

Session I: Jun 26-Jun 30	Session II: Jul 3-Jul 14	Session III: Jul 17-Jul 28	Session IV: Jul 31-Aug 11	Session V: Aug 14-Aug 25
Morning	**Morning**	**Morning**	**Morning**	**Morning**
Word Problems 3-4	Fairfax Collegiate Math 3-4	Writing and Revising 3-4	Math Fundamentals 3-4	Word Problems 3-4
Space Exploration 3-4	Spy Science 3-4	Public Speaking 3-4	Robotics Zoo 3-4	Fairfax Collegiate Math 5-6
Minecraft Exploration 3-4	Minecraft Modding 3-4	Intro to Engineering 3-4	Filmmaking 3-4	Intro to VEX Robotics 5-6
Strategic Reading 5-6	Writing Skills & Grammar 5-6	Fairfax Collegiate Math 5-6	Reading Newbery Winners 5-6	Stop-Motion Animation 5-6
EV3 Robotics Olympiad 5-6	Human Biology & Anatomy 5-6	Filmmaking 5-6	EV3 Robotics Olympiad 5-6	Writers' Workshop 7-9
Science Olympiad 5-6	Architectural Design 5-6	Intro to Arduino 5-6	Minecraft RPG Design 5-6	Python on Linux 7-9
Intro to Pre-Algebra 6-8	Intro to Geometry 7-9	High School Writing 7-9	Intro to Algebra 7-9	
Game Programming 7-9	EV3 Robotic Vehicles 7-9	VEX IQ Challenge 7-9	Small Java 7-9	
TJ Exam Prep 7-8	Small Java 7-9	Role-Playing Game Design 7-9	Genetics 7-9	
Video Production 7-9	T.J. Exam Prep 7-8	Biomedical Engineering 7-9	T.J. Exam Prep 7-8	
Afternoon	**Afternoon**	**Afternoon**	**Afternoon**	**Afternoon**
Reading Reinforcement 3-4	Writing Fundamentals 3-4	Math Games 3-4	Reading Reinforcement 3-4	Writing Fundamentals 3-4
Intro to Robotics 3-4	Robots in Space 3-4	Construction Robots 3-4	Digital Design 3-4	Writing Skills & Grammar 5-6
Scratch with WeDo 3-4	Chemistry Concepts 3-4	Stop-Motion Animation 3-4	Construction Engineering 3-4	EV3 Mobile Robotics 5-6
Fairfax Collegiate Math 5-6	Problem Solving 5-6	Creative Writing 5-6	Brain Games 5-6	Filmmaking 5-6
Filmmaking 5-6	Elementary Debate 5-6	Alice: Creating 3D Worlds 5-6	Gamemaker: Studio 5-6	Intro to Geometry 7-9
Civil Engineering 5-6	Gamemaker: Studio 5-6	Prototyping & 3D Printing 5-6	Human Biology & Anatomy 5-6	Raspberry Pi Engineering 7-9
TJ SIS Essay Prep 7-8	Writers' Workshop 7-9	Intro to Pre-Algebra 6-8	T.J. SIS Essay Prep 7-8	
Epic Fantasy 7-9	Forensic Science 7-9	Model U.N. 7-9	Elements of Style 7-9	
EV3 Competitive Robotics 7-9	Game Design and Modding 7-9	Lasers 7-9	EV3 Robotics Combat 7-9	
Animal Physiology 7-9	Web Video 7-9	Arduino Engineering 7-9	HTML5 Web Design 7-9	

DDietary Restrictions at this facility. Please do not bring meat or shell fish. Lunches may include dairy products and tuna fish. Questions? Please call 703 481-3080.
‡Indoor break location. The supervised twenty-minute morning and afternoon breaks are indoors at these facilities.

Chantilly: St. Timothy Catholic School, 13809 Poplar Tree Rd., Chantilly, VA, 20151

Session I: Jun 26-Jun 30

Morning
Writing and Revising 3-4
Construction Robots 3-4
Digital Design 3-4
Cryptography 5-6
Alice- Creating 3D Worlds 5-6
HTML5 Web Pages 5-6
High School Writing 7-9
Genetics 7-9
PSAT/SAT Prep 7-9

Afternoon
Math Games 3-4
Filmmaking 3-4
Intro to Engineering 3-4
Writing Skills & Grammar 5-6
Elementary Debate 5-6
Minecraft and Python 5-6
Intro to Geometry 7-9
EV3 Robotic Vehicles 7-9
Arduino Engineering 7-9

Session II: Jul 3-Jul 14

Morning
Reading Reinforcement 3-4
Robotics Zoo 3-4
Intro to Raspberry Pi 3-4
Fairfax Collegiate Math 5-6
Filmmaking 5-6
Prototyping & 3D Printing 5-6
Elements of Style 7-9
Mock Trial 7-9
Game Programming 7-9

Afternoon
Word Problems 3-4
Public Speaking 3-4
Space Exploration 3-4
Reading Newbery Winners 5-6
Javascript 5-6
Raspberry Pi Projects 5-6
Intro to Pre-Algebra 6-8
Video Production 7-9
Inventing & 3D Printing 7-9

Session III: Jul 17-Jul 28

Morning
Math Fundamentals 3-4
Science Olympiad 3-4
Minecraft Exploration 3-4
The Writing Process 5-6
EV3 Mobile Robotics 5-6
Graphic Design 5-6
T.J. SIS Essay Prep 7-8
Intro to Algebra 7-9
Android App Development 7-9

Afternoon
Story Writing 3-4
Scratch with WeDo 3-4
Filmmaking 3-4
Problem Solving 5-6
Forensic Science 5-6
Minecraft and Python 5-6
Writers' Workshop 7-9
EV3 Robotics Combat 7-9
T.J. Exam Prep 7-8

Session IV: Jul 31-Aug 11

Morning
Writing Fundamentals 3-4
Stop-Motion Animation 3-4
Minecraft Modding 3-4
Fairfax Collegiate Math 5-6
Elementary Debate 5-6
Civil Engineering 5-6
Reading for Meaning 7-9
Lasers 7-9
Game Design and Modding 7-9

Afternoon
Fairfax Collegiate Math 3-4
Intro to Robotics 3-4
Chemistry Concepts 3-4
Writing Skills & Grammar 5-6
Greenfoot Java 5-6
Filmmaking 5-6
Intro to Pre-Algebra 6-8
Middle School Debate 7-9
Javascript and JQuery 7-9

Dulles: St. Veronica Catholic School, 3460-B Centreville Rd., Chantilly, VA 20151

Session I: Jun 26-Jun 30

Session II: Jul 3-Jul 14

Morning
Math Games 3-4
Chemistry Concepts 3-4
Minecraft Modding 3-4
Strategic Reading 5-6
Speech 5-6
Stop-Motion Animation 5-6
Intro to Algebra 7-9
EV3 Competitive Robotics 7-9
Small Java 7-9

Afternoon
Writing Fundamentals 3-4
Public Speaking 3-4
Filmmaking 3-4
Cryptography 5-6
EV3 Robotics Olympiad 5-6
Civil Engineering 5-6
Reading for Meaning 7-9
Lasers 7-9
Fashion Design 7-9

Session III: Jul 17-Jul 28

Morning
Reading Reinforcement 3-4
Stop-Motion Animation 3-4
Space Exploration 3-4
Computer Math 5-6
Science Olympiad 5-6
Architectural Design 5-6
High School Writing 7-9
EV3 Robotic Vehicles 7-9
T.J. Exam Prep 7-8

Afternoon
Fairfax Collegiate Math 3-4
Persuasive Speaking 3-4
Robotics Zoo 3-4
Writing Skills & Grammar 5-6
Elementary Debate 5-6
Gamemaker: Studio 5-6
Intro to Pre-Algebra 6-8
Forensic Science 7-9
Web Video 7-9

Session IV: Jul 31-Aug 11

Morning
Word Problems 3-4
Intro to Raspberry Pi 3-4
Intro to Engineering 3-4
Creative Writing 5-6
EV3 Robotics Engineering 5-6
Filmmaking 5-6
Intro to Algebra 7-9
T.J. Exam Prep 7-8
Raspberry Pi Engineering 7-9

Afternoon
Writing and Revising 3-4
Public Speaking 3-4
Construction Robots 3-4
Brain Games 5-6
Physics 5-6
HTML5 Web Pages 5-6
T.J. SIS Essay Prep 7-8
Epic Fantasy 7-9
Python on Linux 7-9

RESTON AND HERNDON SCHEDULES

Reston[D‡]: Northern Virginia Hebrew Congregation, 1441 Wiehle Ave., Reston, VA 20190

Session I: Jun 26-Jun 30

Morning
Story Writing 3-4
Scratch with WeDo 3-4
Minecraft Exploration 3-4
Fairfax Collegiate Math 5-6
EV3 Mobile Robotics 5-6
Filmmaking 5-6
Writers' Workshop 7-9
Game Programming 7-9
Inventing and 3D Printing 7-9

Afternoon
Fairfax Collegiate Math 3-4
Intro to Robotics 3-4
Stop-Motion Animation 3-4
Creative Writing 5-6
Raspberry Pi Projects 5-6
Minecraft RPG Design 5-6
Intro to Algebra 7-9
Video Production 7-9
Biomedical Engineering 7-9

Session II: Jul 3-Jul 14

Morning
Math Fundamentals 3-4
Construction Robots 3-4
Digital Design 3-4
Reading Newbery Winners 5-6
Greenfoot Java 5-6
Filmmaking 5-6
Intro to Algebra 7-9
Middle School Debate 7-9
Arduino Engineering 7-9

Afternoon
Writing Fundamentals 3-4
Public Speaking 3-4
Space Exploration 3-4
Fairfax Collegiate Math 5-6
Elementary Debate 5-6
Siege Engines 5-6
Writers' Workshop 7-9
Javascript and JQuery 7-9
Web Video 7-9

Session III: Jul 17-Jul 28

Morning
Reading Reinforcement 3-4
Spy Science 3-4
Minecraft Modding 3-4
Brain Games 5-6
Speech 5-6
Intro to VEX Robotics 5-6
Reading for Meaning 7-9
Game Programming 7-9
Photography 7-9

Afternoon
Fairfax Collegiate Math 3-4
Robotics Zoo 3-4
Stop-Motion Animation 3-4
Strategic Reading 5-6
Gamemaker: Studio 5-6
Minecraft RPG Design 5-6
Intro to Pre-Algebra 6-8
Forensic Science 7-9
T.J. Exam Prep 7-8

Session IV: Jul 31-Aug 11

Morning
Math Games 3-4
Public Speaking 3-4
Intro to Robotics 3-4
Writing Skills & Grammar 5-6
Javascript 5-6
Filmmaking 5-6
Intro to Geometry 7-9
Animal Physiology 7-9
PSAT/SAT Prep 7-9

Afternoon
Writing Fundamentals 3-4
Filmmaking 3-4
Intro to Engineering 3-4
Fairfax Collegiate Math 5-6
Elementary Debate 5-6
Intro to Arduino 5-6
High School Writing 7-9
Small Java 7-9
Video Production 7-9

Session V: Aug 14-Aug 25

Morning
Writing and Revising 3-4
Scratch with WeDo 3-4
Minecraft Exploration 3-4
Problem Solving 5-6
Speech 5-6
EV3 Robotics Engineering 5-6
Elements of Style 7-9
Android App Development 7-9
T.J. Exam Prep 7-8

Afternoon
Fairfax Collegiate Math 3-4
Persuasive Speaking 3-4
Robotics Zoo 3-4
Creative Writing 5-6
Raspberry Pi Projects 5-6
Minecraft and Python 5-6
T.J. SIS Essay Prep 7-8
Intro to Algebra 7-9
Middle School Debate 7-9

Herndon: St. Joseph Parish Hall, 750 Peachtree St., Herndon, VA 20170

Session II: Jul 3-Jul 14

Morning
Brain Games 5-6
Human Biology & Anatomy 5-6
Minecraft RPG Design 5-6
T.J. SIS Essay Prep 7-8
Elements of Style 7-9
EV3 Robotics Combat 7-9
Android App Development 7-9

Afternoon
Creative Writing 5-6
Intro to VEX Robotics 5-6
Javascript 5-6
Intro to Geometry 7-9
Animal Physiology 7-9
T.J. Exam Prep 7-8
Raspberry Pi Engineering 7-9

Session III: Jul 17-Jul 28

Morning
Writing Seminar 5-6
Android Programming 5-6
Prototyping & 3D Printing 5-6
Intro to Algebra 7-9
VEX IQ Challenge 7-9
Genetics 7-9
PSAT/SAT Prep 7-9

Afternoon
Fairfax Collegiate Math 5-6
EV3 Robotics Engineering 5-6
Forensic Science 5-6
High School Writing 7-9
Middle School Debate 7-9
Small Java 7-9
Inventing and 3D Printing 7-9

Session IV: Jul 31-Aug 11

Morning
Problem Solving 5-6
Science Olympiad 5-6
Minecraft and Python 5-6
Reading for Meaning 7-9
Model U.N. 7-9
Game Programming 7-9
Biomedical Engineering 7-9

Afternoon
The Writing Process 5-6
EV3 Mobile Robotics 5-6
Alice: Creating 3D Worlds 5-6
Intro to Pre-Algebra 6-8
Newtonian Physics 7-9
T.J. Exam Prep 7-8
Inventing and 3D Printing 7-9

Session V: Aug 14-Aug 25

Morning
Writing Skills & Grammar 5-6
Gamemaker: Studio 5-6
Prototyping & 3D Printing 5-6
T.J. SIS Essay Prep 7-8
Intro to Geometry 7-9
EV3 Competitive Robotics 7-9
Forensic Science 7-9

Afternoon
Fairfax Collegiate Math 5-6
EV3 Robotics Olympiad 5-6
Forensic Science 5-6
Writers' Workshop 7-9
3D Indie Games 7-9
T.J. Exam Prep 7-8
Biomedical Engineering 7-9

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[‡]Indoor break location. The supervised twenty-minute morning and afternoon breaks are indoors at these facilities.

ASHBURN SCHEDULES

Ashburn - East‡: Loudoun School for the Gifted, 44675 Cape Ct., Ashburn, VA 20147

Session I: Jun 26-Jun 30

Morning
Creative Writing 5-6
Problem Solving 5-6
Intro to VEX Robotics 5-6
Game Programming 7-9
Forensic Science 7-9
Loudoun AOS Prep 7-9
Inventing and 3D Printing 7-9

Afternoon
Human Biology & Anatomy 5-6
HTML5 Web Pages 5-6
Prototyping & 3D Printing 5-6
Writers' Workshop 7-9
Intro to Algebra 7-9
Middle School Debate 7-9
EV3 Competitive Robotics 7-9

Session II: Jul 3-Jul 14

Morning
Writing Skills & Grammar 5-6
Elementary Debate 5-6
Greenfoot Java 5-6
Contest Math 7-9
VEX IQ Challenge 7-9
3D Indie Games 7-9
Lasers 7-9

Afternoon
Computer Math 5-6
EV3 Robotics Engineering 5-6
Forensic Science 5-6
High School Writing 7-9
Loudoun AOS Prep 7-9
Role-Playing Game Design 7-9
Arduino Engineering 7-9

Session III: Jul 17-Jul 28

Morning
Fairfax Collegiate Math 5-6
Speech 5-6
Siege Engines 5-6
Reading for Meaning 7-9
EV3 Competitive Robotics 7-9
Python on Linux 7-9
Neuroscience 7-9

Afternoon
Reading Newbery Winners 5-6
EV3 Robotics Olympiad 5-6
Human Biology & Anatomy 5-6
Intro to Algebra 7-9
Loudoun AOS Prep 7-9
Game Design & Modding 7-9
Raspberry Pi Engineering 7-9

Session IV: Jul 31-Aug 11

Morning
The Writing Process 5-6
Intro to VEX Robotics 5-6
Forensic Science 5-6
Intro to Geometry 7-9
Android App Development 7-9
PSAT/SAT Prep 7-9
Video Production 7-9

Afternoon
Problem Solving 5-6
Greenfoot Java 5-6
Architectural Design 5-6
Writers' Workshop 7-9
Middle School Debate 7-9
EV3 Robotics Combat 7-9
Animal Physiology 7-9

Ashburn - West: St. Theresa Catholic School, 21370 St. Theresa Ln., Ashburn, VA 20147

Session I: Jun 26-Jun 30

Morning
Fairfax Collegiate Math 3-4
Chemistry Concepts 3-4
Minecraft Modding 3-4
Writing Skills & Grammar 5-6
GameMaker Studio 5-6
Stop-Motion Animation 5-6
Intro to Geometry 7-9
Model UN 7-9
EV3 Robotics Combat 7-9

Afternoon
Writing Fundamentals 3-4
Public Speaking 3-4
Robotics Zoo 3-4
Fairfax Collegiate Math 5-6
Forensic Science 5-6
Minecraft and Python 5-6
High School Writing 7-9
Small Java 7-9
Photography 7-9

Session II: Jul 3-Jul 14

Morning
Story Writing 3-4
Persuasive Speaking 3-4
Construction Robots 3-4
Problem Solving 5-6
Filmmaking 5-6
Civil Engineering 5-6
Reading for Meaning 7-9
Javascript and JQuery 7-9
Genetics 7-9

Afternoon
Word Problems 3-4
Filmmaking 3-4
Intro to Engineering 3-4
The Writing Process 5-6
Speech 5-6
EV3 Robotics Olympiad 5-6
Intro to Pre-Algebra 6-8
Middle School Debate 7-9
Game Design and Modding 7-9

Session III: Jul 17-Jul 28

Morning
Math Fundamentals 3-4
Public Speaking 3-4
Spy Science 3-4
Strategic Reading 5-6
Gamemaker: Studio 5-6
Raspberry Pi Projects 5-6
Intro to Geometry 7-9
EV3 Robotics Combat 7-9
Web Video 7-9

Afternoon
Writing Fundamentals 3-4
Intro to Robotics 3-4
Digital Design 3-4
Brain Games 5-6
Physics 5-6
HTML5 Web Pages 5-6
Writers' Workshop 7-9
Mock Trial 7-9
HTML5 Web Design 7-9

Session IV: Jul 31-Aug 11

Morning
Story Writing 3-4
Robotics Zoo 3-4
Science Olympiad 3-4
Fairfax Collegiate Math 5-6
EV3 Robotics Olympiad 5-6
Minecraft and Python 5-6
Reading for Meaning 7-9
3D Indie Games 7-9
Loudoun AOS Prep 7-9

Afternoon
Fairfax Collegiate Math 3-4
Space Exploration 3-4
Minecraft Exploration 3-4
Writing Skills and Grammar 5-6
Elementary Debate 5-6
Javascript 5-6
Intro to Algebra 7-9
EV3 Competitive Robotics 7-9
Lasers 7-9

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3830 Seminary Rd.

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Loudoun School for the Gifted
44675 Cape Ct.

Ashburn - West
St. Theresa Catholic School
21370 St. Theresa Ln.

Chantilly
St. Timothy Catholic School
13809 Poplar Tree Rd.

Dulles
St. Veronica Catholic School
3460-B Centreville Rd.

Fairfax
Gesher Jewish Day School
4800 Mattie Moore Ct.

Falls Church
St. Katherine Greek Orthodox Church
3149 Glen Carlyn Rd.

Herndon
St. Joseph Parish Hall
750 Peachtree St.

McLean
Lutheran Church of the Redeemer
1545 Chain Bridge Rd.

Oakton
Pinnacle Academy
2854 Hunter Mill Rd.

Reston
Northern Virginia Hebrew Congregation
1441 Wiehle Ave.

Vienna
Green Hedges School
415 Windover Ave., N.W.

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