Icky, Sticky Fun

Have you ever wondered what makes your pancakes fluffy? There are messes to be made and things to explore. Only the most curious minds are needed in this laboratory. Come to this class, get your hands dirty, and become the world’s most creative chemist or inventor of the gooiest gunk ever glopped!

Fun with Magic

Who doesn't like magic tricks? In this course, education and imagination become best friends. Be prepared to dazzle your friends by improving existing skills and exploring new ones. Learn how to use everyday objects to perform basic to more complex tricks. Improve your concentration, fine and gross motor skills; shoo away shyness with showmanship, and teamwork. Coin tricks, card tricks, levitating illusions, and other magician techniques will be explored and practiced. For parents, this course will facilitate your child's academic learning (following complex directions, problem solving, conceptualizing, sequencing; reading and mathematics, etc.).

Jr. Vets

Do you love animals? Are you thinking about becoming a veterinarian? You will explore the characteristics and behaviors of dogs, cats, and other pets. They will learn and practice giving emergency first aid as well as preventative care: how to identify and prevent food poisoning, and many other techniques used by animal health professionals. You may be exposed to a trained, gentle dog or cat as part of the course activities. You who are allergic to or are afraid of dogs and cats (and other popular pets) are discouraged from enrolling in this course.

Rainbow Electronics

Do you love taking things apart and putting them back together? Explore the basic principles of electronics using resources such as Little Bits. You will work in groups and individually on challenging electronics activities that promote problem solving, collaboration, communication, and the engineering design process. Electronic inventions developed in class may include a vehicle and a throwing arm.

Gee Gee Geometry

Captain Geo and his crew are stuck in Line land and they need your help to return to Space. When the journey begins the crew has been transformed into points or dots, no bigger than the head of a pin. Your task is to help the crew return to their spaceship and back to the World of Dimensions. Help Captain Geo and his crew find their way back home using tiles, cubes, puzzles, mirrors, and even marshmallows! You will use geo-boards to learn geometry through manipulation, improving visual thinking, spatial reasoning, and problem strategies. Design 3-D figures and create shapes and patterns from a variety of materials.
Zoology

What is the fastest mammal, or the largest insect, or the oldest tree? Explore the realm of all creatures great and small through group and individual activities designed to introduce the types, characteristics, and behaviors of the different forms of life on Earth. You will utilize problem solving, collaboration, communication, and scientific reasoning skills to investigate what constitutes the "life" in life science.

WoW: Writing Stories

Do you love stories? Do you love to tell, listen to and/or write short stories? Each week there will be reading, writing, sharing, and celebrating your work. In this Workshop on Writing course, whole group, small group, and individualized activities will be used to inspire ideas and craft short story masterpieces that can be submitted for publication!

Junior Pilots

Calling all pilots! You will explore the science and engineering principles that allow humans to fly. Enjoy a fun and challenging introduction to aviation, including airplane parts, control surfaces, angles, weight and balance, the metric system, careers, and the history of flight. You will use your design and engineering skills to build things that really fly!

Grades 2-3

WoW: Stories in 3D

Do you love pop-up books? If you do, you will use the mechanism of paper engineering (pop-up mechanism) to produce 3D stories which illustrate geometric concepts. The process of creating these 3D stories allows for writing plots, building imagery, and testing predictions. This approach transports you beyond the static 2D aspects of geometry and story-telling to a more dynamic, life-like world where characters and shapes "move" and "talk"!

Mini Med

We are looking for talented future doctors. Explore the world of medicine to understand what it takes as we dissect various specimens. Use your curiosity and scientific reasoning skills, and you will gain a deeper understanding about human anatomy, physiology, immunology, microbiology, systems of disease, and more!

Witches & Wizards of Chemistry

Ever wonder how we can make common household items behave a certain way? Is it magic? No, more likely it is chemistry! Become a chemistry witch or wizard by learning how chemicals react to make food tasty, make glue sticky, or put the stretch in your favorite stretchy clothes. You will be challenged by group and individual projects, labs, and activities that may require you to bring in a few common items for testing, such as a glue stick or a stretchy shirt. This course prepares students who are interested in learning about molecular chemistry.

Where's My Budget?

In this time of economic “challenges”, it is never too early to introduce children to all aspects of money (earning spending and saving) and the economy. This introduction to economics for early learners includes topics such as: what money is, where it comes from, and what we do with it. Earn money, spend money, and save money. Using problem solving skills, you will gain an understanding of goods and services, needs and wants, and the difference between producers and consumers.
Junior Code Breakers

When you think of spies and secret agents, you might think of lots of things: nifty gadgets, foreign travel, dangerous missiles, fast cars and being shaken but not stirred. But do you know that cracking codes and unravelling the true meaning of secret messages involves loads of maths as well? In this class, your mission is to crack as many codes as possible using problem-solving skills, ancient cipher systems, and your wits! Come to the class and make up codes of your own and write your own secret messages!

Magic through Science

How do magicians achieve the effects of vanishing, transforming, penetration, and teleportation? What is the science behind all these intriguing effects? Come to this class and be prepared to dazzle your friends with new skills. Learn the basics of coin tricks, card tricks, levitating illusions, and other magician techniques. More importantly, learn how to critically challenge your assumptions and learn the science behind all these tricks!

Personal Soliloquy

To express or not to express, that is the question. The struggle to express oneself or personal feelings in a powerful and articulate manner can be daunting. Soliloquys are helpful in expressing your inner dialogue or personal feelings on a subject. You will be reading and analyzing a few famous soliloquys, while working on learning more about your own writing styles. In this class you will be analyzing work from literature, drama, and movies. In addition you will be writing and performing your own soliloquy. As part of this class you will be asked to carefully watch the delivery of powerful speakers and pushed to discover your own speaking style.

RAPS: Ozobots

Save the world with robots! This introductory engineering applications course is designed to challenge students to create and complete tasks using Ozobots. Ozobots operate by interpreting the color that is underneath them into a command. You will collaborate to learn programming logic by creating color patterns that successfully tell their Ozobot to navigate a maze or complete an obstacle course.

Grades 4-5

Logic Puzzles

What do Lewis Carroll and Raymond M. Smullyan have in common? What do they have to do with logic puzzles? What are the most common mistakes found in everyday thinking? How can we avoid them and thereby increase our reasoning powers? Syllogisms, logic mazes, nonograms, and Sudokus are a few of the logic puzzles you’ll learn to solve (and create your own for others to solve). Deductive reasoning, case analysis, careful reading, and proof by contradiction are just a few of the skills you’ll learn and apply. Join us for one of the most intriguing, challenging and practical courses you’ll ever take. Become a more critical thinker and a more reflective consumer.

Force, Motion, Energy

Got Energy? What's a WATT? How do solar cells work? Let's create new ideas and find new possibilities for solving our energy needs. Each day you will explore a new source of energy and distinguish between renewable and non-renewable sources. You will begin with a brief introduction into understanding our current energy uses and sources (fossil fuels, nuclear power). Then you embark upon an exploration into many alternative sources (solar, geothermal, wind, hydroelectric, biomass, hydrogen). This course creatively encourage you to challenge your minds in search of new ways to generate energy.
The Sound of Numbers

Do you know that mathematics and music have a lot in common and mathematics is used to create the music you enjoy? Come and explore the connections between mathematics and music, learn wave frequencies, octaves, and more! Learn the mathematics behind music using your analytical abilities and creativity! By the end, you will have the opportunity to compose your own music piece using magical mathematics!

RAPS: Vex Robotics

Save the world with vex robots! This engineering applications course is designed to challenge students to choose a real-world problem to solve and use robots as the focus of the solution. Investigate the problem, then design, model, and build the solution using computer design software and available parts. You will present your solutions, critique each other’s projects, and use the feedback to improve your solutions. You will be encouraged to create solutions that also accomplish goals in other courses.

Sketch Pad

What is the difference between sketching and drawing? How do artists grow and become accomplished artists? In this course, you will develop greater proficiency towards mastery in drawing skills. You will explore and experiment with innovative ideas and approaches in making works of art and design leading to the discovery of their artistic and creative potential. Multiple projects, requiring you to use your knowledge and skills, will result in the completion of a portfolio.

Back to the Roots!

In the last few decades, English has become a truly global language. But few people realize how much of our Modern English vocabulary comes from international sources. In this course, you will learn about the roots (etymology) of English words from several different languages, expanding your vocabulary, and learning about history at the same time.

Math in Sports & Games

Can you really keep your eye on the ball? How is massive data collection changing sports? You will draw conclusions from mathematical analysis using inductive reasoning, evaluate data using principles of probability, assess risk and develop strategies that drive event outcomes, and model physical processes in order to predict outcomes. Come and learn how probability, math, and statistics can be used to help baseball, football and basketball teams improve, player and lineup selection as well as in game strategy.

Illusion Science

What you think you see isn’t always what is happening. You will explore elements of perception involving alternative sensory observations. Have you ever seen sound in action? By seeing sounds or how sound works you will be able to interpret objects differently. You will be examining how perception changes with different senses, how to fool someone else’s perceptions, and discover how the brain works to process different interactions. Chemistry and psychology will collide in this Illusion Science course.

Watercolor Works

In this course, we will explore painting with watercolor. You’ll practice basic wet and dry techniques, washes, and blends. You’ll also begin to acquire skill in composition and color development. The essentials of color theory, composition, drawing, and 2D design of the visual arts are fused with the inspiration of the natural world, including plant and animal life, help you get a closer look at a smaller world that you may otherwise walk right by! Come ready to roll up your sleeves and put on your smocks!
Grades 6-8

Open Studio

Draw in 3-D! Start simply and build in complexity! Through a series of exercises, assignments, and visual presentations, you will learn the basic rules of creating perspective and how to accurately represent three-dimensional objects in a realistic space. You will also investigate color interaction, contextual relationships, conceptual and compositional strategies, and the relationship between (subject, content, meaning) and process.

Big Data

Do you want to understand big data and how it will impact your life? The recent explosion of social media and the computerization of every aspect of economic activity resulted in creation of large volumes of mostly unstructured data: web logs, videos, speech recordings, photographs, e-mails, Tweets, and similar. This course introduces you to several key IT technologies that you will be able to use to manipulate, store, and analyze big data. You will look at the basic tools for statistical analysis, R and Python, and a few key methods used in Machine Learning. Previous programming experience is not required! By following along with provided code, you will experience how one can perform predictive modeling and leverage graph analytics to model problems.

Fluid Mechanics

How do forces move on aircraft? How do the mass flow of petroleum run through pipelines? How to predict weather patterns? Come and develop an understanding of fluid dynamics in aerospace engineering as well as a variety of other fields! You will understand how fluids behave and predict the actions of moving fluids. Challenge yourself by engineering a Vortex Powered Jellyfish!

Photo Journalism

If you want to learn how to tell impactful stories with your photographs, this course is for you! You will learn how to see the world like a photographer and how to capture compelling images using proper light, exposure, and composition. You will learn the principles of narrative and visualization that professional photojournalists use to successfully document the world around them. Throughout the course, you will complete a series a photo projects that will be reviewed and evaluated by your peers and your instructor. By the time you complete the course, you’ll have a portfolio of high-quality photos and the skills to succeed as a junior photojournalist.

Downsizing Spaces

In this course, you will learn the core techniques for building architectural models using hand tools. Working with woods, silicones, plastics, and polymer clays, you learn how to choose appropriate materials, and have the opportunity to create different models. You will also learn how to determine scale and size; and how to set up level of abstraction and time planning. The course encourages you to use your analytical abilities and creativity, by the end of the course, you will have built your own architectural model!

Diagnosing Diseases

This course is a survey of the mechanisms of diagnosis of disease. You will learn the foundations of clinical diagnostic methods in basic chemistry, biology, and physics. You will also gain a basic understanding of the use of clinical data, the interpretation of diagnostic information, the limits of using clinical data for diagnosis, and using clinical data to problem solve. Polish your data analysis skills and problem-solving skills through diagnosing a variety of diseases!
It IS My Business

The course is designed to expose the interested student to many functions of modern business using research and problem-solving skills. It will also expose you to the multitude of career fields in the areas of business. Topics such as business environment, management, organization, marketing, finance, accounting, and data processing are discussed in an introductory manner. If you're thinking about starting your own business in the future, this is the right course for you! You will learn everything from how to develop proven marketing techniques to traditional and nontraditional financing options.

The Sound of Numbers

There is geometry in the humming of the strings, and there is music in the spacing of the spheres. Surprised? Come and learn how the notations of composers and sounds made by musicians are connected to mathematics. Use your analytical skills and creativity, you will have the opportunity to create your own music using mathematics. After taking the course, the next time you hear or play classical, rock, folk, religious, ceremonial, jazz, opera, pop, or contemporary types of music, you will be able to explain how mathematics is used to create the music you enjoy.

Grades 9-12

History of Rock and Roll

Do you characterize yourself as a rocker or a roller? Have you ever listened to a song and wondered exactly what the artist was thinking as he or she composed the piece? Rock and Roll has had the power to inspire, motivate, and influence people all over the world. The History of Rock and Roll is a class where you will take a journey back to the beginning of the 20th century when modern rock was emerging as the result of cultural collisions such as African, African-American, and European influences. You will be introduced to a variety of musical genres from jazz of the 1920s to grunge of the 1990s and everything in between. Whether you are a head banger, two-stepper or fist pumper, this class has something to offer any music lover.

Global Trade and Investment

Are you interested in international trade and finance with applications to current policy issues? In this course you will learn the basic tools to understand what determines the flow of goods across countries, and what determines the flow of savings and investments from one country to another. You will also learn applications to a number of topics of current interest, including the debate on globalization, free trade agreements, the U.S. current account deficit, the medium run prospects for exchange rates, European integration, and the debate on global financial architecture following the financial crises in East Asia and Argentina.

Software Architecture and Testing

This course will examine fundamental software testing and program analysis techniques. You will learn the state of the art in testing technology for object-oriented, component-based, concurrent, distributed, graphical-user interface, and web software. Emerging concepts such as test-case prioritization and their impact on testing will be examined. You will gain hands-on testing/analysis experience via a multi-phase course project. And finally, you have the opportunity to design your own software and test it!

Small Business Startup

Learn how to take your dream of starting a business and put it into action! In this class, you'll learn everything you need to know about starting a business. You'll begin by discovering the tricks to picking the right opportunity for you. Next, you'll learn how to develop proven marketing techniques to easily build sales. Since every business needs money, we'll discuss traditional and nontraditional financing options. You'll also learn
time-management techniques especially for entrepreneurs. Finally, you'll learn easy-to-implement employee-management procedures and how to write business policies that help you build your business.

Criminal Justice

Do the three main sectors of the criminal justice system - the police, the courts, and corrections - have an impact on crime, achieve justice, and constitute a system? This course will critically look at the historical development of each of these sectors, their relation to broader social forces, and their internal problems and dilemmas. You will learn the legal foundations; processing and correction of offenders; and extent and types of crime and victims. Topics may include current controversies (police brutality, sentencing trends, community policing, plea bargaining, parole) as well as the impact of broader issues like race, gender and social class.

Pharmacology

This course introduces the study of the properties, effects, and therapeutic value of the primary agents in the major drug categories. Topics include nutritional products, blood modifiers, hormones, cardiovascular agents, respiratory drugs, and more. Upon completion, you will have a working knowledge of pharmaceutics, pharmacokinetics, and pharmacodynamics. (see course: Medical Ethics)

So You Think You Can Sing and Dance (performing arts, K-12)

This is a course that is suitable for students of all levels who are interested in singing and dancing! Beginning students will discover their best singing voice and more experienced singers will gain an opportunity to exercise their vocal muscles through exploration of and experimentation in various vocal traditions. Beginning dancers will learn basic moves first in ballet, jazz, and tap, and can add on other styles including acro, hip hop, modern, musical and theatre. Advanced dancers will have fun creating original choreography. At the end, you will use your singing and dancing skills together to present a Broadway-style mini musical show! (pre-session for Summer Musical Theater Academy)

Sunday (on-site)

K-1

Under the Sea

Come on a journey with us and become an underwater explorer! The ocean will come alive as you discover the many exciting things to see and do underwater. Through great literature, multimedia, hands-on projects and research, you will learn about some of the many different marine species, endangered marine species, migrating marine life, effects of pollution, marine careers, and fishing. You will also head into the ocean to explore the environments and animals that make the world's oceans their home.

Fun with Magic

Who doesn't like magic tricks? In this course, education and imagination become best friends. Be prepared to dazzle your friends by improving existing skills and exploring new ones. Learn how to use everyday objects to perform basic to more complex tricks. Improve your concentration, fine and gross motor skills; shoo away shyness with showmanship, and teamwork. Coin tricks, card tricks, levitating illusions, and other magician techniques will be explored and practiced. For parents, this course will facilitate your child's academic learning (following complex directions, problem solving, conceptualizing, sequencing; reading and mathematics, etc.).
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Write, Create, Act

Be prepared to bring your pens, creative minds, a needle and some thread, and your acting skills! Choose a story, rewrite it. Choose a character, design a unique costume. Choose a spotlight, act out your revised story. Take this course if you want to use your imagination, creativity, and "acting chops"!

Icky, Sticky Fun

Have you ever wondered what makes your pancakes fluffy? There are messes to be made and things to explore. Only the most curious minds are needed in this laboratory. Come to this class, get your hands dirty, and become the world’s most creative chemist or inventor of the gooiest gunk ever glopped!

Traveling Paintbrushes

Engage in exciting art projects that range across many years! You will learn the basic techniques of painting in a multitude of ways. You will demonstrate creative self-expression and learn to identify different types of artwork. You will be introduced to different famous painters, learn about colors and how they mix, experiment with different media, and most important become educated painters!

Roller Coaster Catastrophe

Hold onto your seats! This is one fun ride! Roller Coaster Catastrophe guides you through a scientific mystery, set in an amusement park, where the rides are not working properly. You will learn about the major historical people and moments related to discoveries in the field of motion and gravity and apply that knowledge to solve the mystery. You will also use the laws of motion and gravity to design your own roller coaster!

Bank On It

You will have the opportunity to be a part of a real life business endeavor. You will find out how much it costs to start up, run and maintain a small business. Think about a real world problem that needs an entrepreneurial, small business solution. Each week you'll brainstorm with your fellow entrepreneurs to work through and complete the steps to starting your very own business!

Grades 2-3

WoW Creative Writing: Myths & Fables

This course, like all of our WOW! Series courses, is structured as a workshop and offers an opportunity to study myths and fables. You will study myths and fables from around the world and help you understand the techniques and the art of writing myths and fables. You will gain greater writing and reading skills, insight, and enjoyment as readers, thinkers, critics, writers, and publishers of your own (original!) myth or fable.

Traveling Paintbrushes

Engage in exciting art projects that range across many years! You will learn the basic techniques of painting in a multitude of ways: colors and how they mix, experiment with different media. You will demonstrate creative self-expression and learn to identify different types of artwork. You will be introduced to different famous painters, and you will become educated painters yourself!
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Junior Code Breakers

When you think of spies and secret agents, you might think of lots of things: nifty gadgets, foreign travel, dangerous missiles, fast cars and being shaken but not stirred. But do you know that cracking codes and unravelling the true meaning of secret messages involves loads of maths as well? In this class, your mission is to crack as many codes as possible using problem-solving skills, ancient cipher systems, and your wits! Come to the class and make up codes of your own and write your own secret messages!

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RAPS: Ozobots

Save the world with robots! This introductory engineering applications course is designed to challenge students to create and complete tasks using Ozobots. Ozobots operate by interpreting the color that is underneath them into a command. You will collaborate to learn programming logic by creating color patterns that successfully tell their Ozobot to navigate a maze or complete an obstacle course.
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The Sky's the Limit

Learn all about airplanes and various sciences that relate to aviation. Enjoy a fun filled introduction to airplane parts, control surfaces, angles, weight and balance, the metric system, occupations and the history of flight. You will use your engineering minds to build model airplanes or gliders that really fly (using paper, styrofoam and balsa wood)!

Poise & Public Speaking

We present ourselves in formal and personal settings every day of our lives. Learn how to develop important aspects of self-presentation and put these skills to good use across the curriculum and in social settings as well. You have great potential to speak effectively! After taking the course, you will evolve your own personal style, and develop poise and confidence when communicating with an audience.

Mathematical Mysteries

Did you ever wonder what kinds of number systems were used by people long ago? Do the Egyptians use place value? How do you subtract in a base-three system? How do you read and interpret Chinese numbers? What do all numeration systems have in common? What are their differences? You are the mathematician on a team of archeologists and you have just found a stone with some strange symbols. During this course, you will not only be able to figure what the symbols mean as you interpret different number systems using problem-solving skills, but you will create your own mystery system!

Kitchen Chemistry

Your kitchen is one big chemistry lab! Learn how chemistry is alive in your own home! Explore colors, solids, liquids, gases, polymers, chemical reactions, mixtures, solutions, and more. You will learn what chemistry is, what chemists do, and why it is important to study this field of science. This course will draw out the scientist in you by teaching matter, chemical compounds and the elements on the periodic table. Use your new kitchen chemistry knowledge and scientific reasoning skills to create snacks that go along with the lesson of the day.

Grades 4-5

Persuade Me: Enhanced Public Speaking

Did you know if you read a sentence in three different ways, you are able to project three completely different meanings? Did you know changing one word in a sentence can completely alter the strength of your speech? In this course you will be challenged to create an original argument where you not only learn how to read in a persuasive manner, but also how to handle curveballs that may arise. You will work on understanding powerful body language, how to motivate through tonality, and begin to learn how to connect with an audience on a personal level. The course will utilize techniques in acting such as improvisation and relaxation. Please note: This course is not a debate course; rather it will focus on presentation, rhetoric, and writing.

The Sky's Limit

Prepare your spacesuits and pack your bags to be transported with your flight crew for training in GT2017’s first training mission. For centuries space has sparked the curiosity of philosophers and scientists. Explore space
and conduct different activities to learn more about how great astronauts like Neil Armstrong lived among the stars. Through scientific experiments and use scientific reasoning skills, you will learn the importance of items like oxygen, air pressure, and differences in weight due to a lack of gravity. How far beyond the planets will the GT2017 mission journey?

Logic Puzzles

What do Lewis Carroll and Raymond M. Smullyan have in common? What do they have to do with logic puzzles? What are the most common mistakes found in every day thinking? How can we avoid them and thereby increase our reasoning powers? Syllogisms, logic mazes, nonograms, and Sudokus are a few of the logic puzzles you'll learn to solve (and create your own for others to solve). Deductive reasoning, case analysis, careful reading, and proof by contradicting are just a few of the skills you'll learn and apply. Join us for one of the most intriguing, challenging and practical courses you’ll ever take. Become a more critical thinker and a more reflective consumer.

Physics of Textiles

A perfect mix of fashion and physics together! Explore the different characteristics of textiles which have transformed the daily use of fibers throughout history. Find out what allows certain types of cloth fibers to be aerodynamic or wick away moisture, while also considering physical attributes and aesthetics. For a final project, you will be able to design a new form of textile for a purpose, such as an aerodynamic structure or water filtration device. You will plan out your design in three dimensions. Advanced students may use 3D printing software as time allows.

Architectural Design

This course is designed to introduce students to ideas, principles, and methods of solving architectural problems in a studio setting. You will explore the architectural concepts of space, form, function, and technology through exercises in the visualization and drafting of architectural objects and construction conditions. You will also investigate historic, geographic, demographic, economic, and sociological aspects of a given neighborhood. Leave the class with a project design of your own using your creativity!

WoW: Publish Me

Somewhere between the short story and the novel is the novella. Just as a baker or candlestick maker uses different tools and techniques to create cakes or candles, you will learn about and practice using narrative elements and literary devices to plan for, craft, and publish your very own novellas! You will analyze the works of novella authors and will plan and develop your own novellas. Each week as your imagination grows, you will stretch out the small moments in your stories to create a vivid and detailed novella complete with illustrations (maybe a friend in the Sketch Pad course will help?!) Using the tools and techniques of language and storytelling you will create your masterpiece. An Authors Gala will be held where excerpts from your novellas (masterpieces) will be read and your hard work celebrated.

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Save the world with vex robots! This engineering applications course is designed to challenge students to choose a real-world problem to solve and use robots as the focus of the solution. Investigate the problem, then design, model, and build the solution using computer design software and available parts. You will present your solutions, critique each other’s projects, and use the feedback to improve your solutions. You will be encouraged to create solutions that also accomplish goals in other courses.
Order in the Court

Ladies and gentlemen of the jury:
Learn about the law and have fun, too! Plaintiffs and defendants. Witness testimony. Burden of proof. These are just a few of the legal terms students will learn in the exciting new course called LAW FAIR. Find out about courtroom procedure from an insiders perspective. Write your own testimony as a witness, or prepare your opening arguments as an attorney.
Students will have the opportunity to prepare an original law case and submit it to the NJ State Bar Foundation for review in their Law Fair competition. Laws will be researched, testimony written, and both sides of the case carefully explored and designed.
At the end of the course, a Mock Trial presentation will be performed. Which part do you want to play a witness, an attorney or maybe even the judge?
Your honor, the defense rests.

Gee Gee Origami

Depending upon how you learn, math classes can cause panic and intense sweating (not so good for the student sitting next to you)! Discover the ancient art of paper folding. From basic to complex, you will learn paper folding techniques that demonstrate geometrical concepts. You and your classmates will construct a variety of origami models including geodesic domes. Learn to solve linear equations represented in origami. Learn the math and science concepts in paper folding! Be prepared to succeed and achieve moving from novice to practitioner to expert levels of skill and knowledge.

Grades 6-8

Mind Benders

You will be asked to challenge yourself and classmates in games that are hands-on using problem-solving and analytical skills. You will learn some of the history of the games and be asked to compete against yourself. Go (Reversi/Othello), Checkers, Mancala, and Risk are just a few of the games that will be covered in this course. We know you will be hooked on Mind-Benders on the first day of class.

Epidemiology

How have we, as a species, managed to endure and conquer disease over time? What worked, what didn't, and how has that affected our history? In this course, you will use your analytical skills, work collaboratively and individually to determine the causes and explore the responses to the spread of disease from ancient plagues to the ongoing HIV pandemic.

Big Data

Do you want to understand big data and how it will impact your life? The recent explosion of social media and the computerization of every aspect of economic activity resulted in creation of large volumes of mostly unstructured data: web logs, videos, speech recordings, photographs, e-mails, Tweets, and similar. This course introduces you to several key IT technologies that you will be able to use to manipulate, store, and analyze big data. You will look at the basic tools for statistical analysis, R and Python, and a few key methods used in Machine Learning. Previous programming experience is not required! By following along with provided code, you will experience how one can perform predictive modeling and leverage graph analytics to model problems.
Forensic Sculptor

Are they human? One of the first questions asked when skeletal remains are found. Forensic artists assist in the identification of human remains, missing persons or victims of crime. This course is the point where art and science (anthropology) come together. In this course, students will explore technical and conceptual art skills along with medical and anatomical knowledge needed in the forensic art profession.

G&T Debate

Prove you have what it takes to craft and deliver polished responses as part of the Gifted & Talented Debate Team! Verbal communication mastery is a highly valued skill. Work collaboratively and individually to practice your written and verbal communication skills. From doctors and lawyers to parents and politicians, your debating skills will serve you well.

Whodoneit? A Mysterious course on Reading and Writing

This class will teach young writer’s how to appreciate and write mysteries. Understanding how the genre of a mystery is written is key, so time will be dedicated at the beginning of the course to read and map out age appropriate mysteries. Once the ground work is paved the you will then generate story ideas, map out your own stories, by creating characters and settings, developing plots and designing clues that can be used in the story. You will learn to add important details such as red herrings (bits of information that are designed to mislead readers) and suspense elements. You will move through the writing process culminating with a final product, a published mystery.

Landscape Architecture

Landscape architecture combines art and environmental sciences. Landscape architects design exterior spaces and places for human use. This course will introduce the fundamental elements and principles of landscape architecture from feasibility studies to concept design, schematic design to working drawings and specifications. You will achieve proficiency in visual literacy. Site design problems incorporating a mixture of cultural, environmental, and historical topics will provide you with a framework to develop analytical skills, communication techniques, and general understanding of landscape architectural design as a means to create 2D and/or 3D representations of viable spaces that are environmentally, economically, and culturally sustainable. Who will achieve top honors in the G&T Landscape Design Challenge?

Diagnosing Diseases

This course is a survey of the mechanisms of diagnosis of disease. You will learn the foundations of clinical diagnostic methods in basic chemistry, biology, and physics. You will also gain a basic understanding of the use of clinical data, the interpretation of diagnostic information, the limits of using clinical data for diagnosis, and using clinical data to problem solve. Polish your data analysis skills and problem-solving skills through diagnosing a variety of diseases!

Grades 9-12

Cryptography

Cryptography is an indispensable tool for protecting information in computer systems. In this course you will learn the inner workings of cryptographic systems and how to correctly use them in real-world applications. The course begins with a detailed discussion of how two parties who have a shared secret key can communicate securely when a powerful adversary secretly listens to their conversation. You will examine many deployed protocols and analyze mistakes in existing systems. Throughout the course, you will be exposed to many exciting open problems in the field and work on fun programming projects.
Leadership 101

Ask ten people “what makes a good leader?” and you might get ten different answers. This class will take you through the components of effective leadership framework, through skills and knowledge to take your leadership to the next level, and make leadership development relevant and practical for everyone. You will learn skills you need to leverage your strengths and the strengths of others to maximize your collective impact. Come and become a future leader!

Big Ideas Short Films

Do you love movies and hope that one day you can make a film of your own? With the proliferation of inexpensive video cameras, cellphones, and powerful editing and effects software, anyone can make a short independent film. This hands-on course will take you through the filmmaking process from script to screen, culminating in the production of a short film. Topics will include short scriptwriting and development, production, directing, camera and lighting, audio editing, and more. Come and discover your potential as a filmmaker!

Abnormal Psychology

This course is an introduction to theories and research concerning abnormal behavior. It will address such topics as the frequency of abnormal behavior of various types; how abnormal behaviors are classified into various diagnostic categories; the causes of psychological disorders; and the variety of methods employed in the treatment of abnormal behavior. Bring your curiosity and your research skills to come on board!

Advanced Public Speaking

This course will offer each of you valuable skills for future success in communicating one-on-one, in small groups, and to an audience in professional settings. You will go beyond the basic class and focus on speech writing, executing speeches/presentations and props used in speeches. You will study and practice listening, non-verbal language, communication ethics, fitting the message to the audience, timing, interpersonal and group interaction, using technology, research and presentational aids, and speaking in public with integrity, knowledge, confidence, and skills. Be prepared to shine as a great speaker!

Medical Ethics

When it comes to healthcare, the stakes are high: Who should get medical attention? What kind and for what reason(s)? Who should be denied medical treatment and when? Who should decide? This course will examine some of the ethical issues faced by medical professionals, their patients, and policy makers. You will become familiar with legal and institutional positions, consider and debate opposing arguments on various topics, and examine relevant case studies, and continue to build on your ethical wisdom related to medical contexts. (see course: Pharmacology)

Grades 4-8 Online Courses

The Architectural Experience

This conceptual architecture course will focus on introducing students to architectural patterns and techniques through activities, photos, and videos. Students may need to use common household items such as rulers, straws, and cardboard to complete their own architectural models. Successful students are those who enjoy finding patterns in data, who are observant and inquisitive, who are not afraid to actively contribute to scholarly discussions among peers, who have a strong command of written and verbal English, and who possess a sustained motivation to complete tasks on time. This course includes one hour of online discussion per week.
over the course of the nine-week session, so students will need Internet access to communicate via the Canvas learning management system.

Commodities

What will the price of gasoline be in two weeks from today? Students will learn how to spotlight price action in commodity and stock markets by learning how to recognize, analyze, and predict price trends using charts and graphs. Students will explore the connections among international political events, local weather patterns, and the price patterns for products such as crude oil. Successful students are those who enjoy finding patterns in data, who are observant and inquisitive, who are not afraid to actively contribute to scholarly discussions among peers, who have strong command of written and verbal English, and who possess a sustained motivation to complete tasks on time. This course includes one hour of online discussion per week over the course of the nine-week session, so students will need Internet access to communicate via the Canvas learning management system.

Chemistry of Food

Do you see your kitchen as your lab? Work collaboratively and individually to explore the chemical reactions necessary for us to cook, eat, and enjoy our food. Discover what occurs at the molecular level when dough expands or a sauce thickens. Successful students are those who enjoy finding patterns in data, who are observant and inquisitive, who are not afraid to actively contribute to scholarly discussions among peers, who have a strong command of written and verbal English, and who possess a sustained motivation to complete tasks on time. This course includes one hour of online discussion per week over the course of the nine-week session, so students will need Internet access to communicate via the Canvas learning management system.

Wild Weather

Ever wonder how a thunderstorm can produce so much lightning? Do you enjoy measuring the snow whenever we have a winter storm? Then you will love the Wild Weather online course! We will be investigating how and why severe weather occurs with a focus on U.S. events. Students will be expected to record their own weather observations using common tools such as a plastic rain gauge and thermometer, and to regularly analyze maps, graphs, and charts of real, severe weather events. Successful students are those who enjoy finding patterns in data, who are observant and inquisitive, who are not afraid to actively contribute to scholarly discussions among peers, who have a strong command of written and verbal English, and who possess a sustained motivation to complete tasks on time. This course has been designed by Associate Director Chris Duvall, a severe weather enthusiast who earned his BS in Meteorology from The University of Oklahoma. This course includes one hour of online discussion per week over the course of the nine-week session, so students will need Internet access to communicate via the Canvas learning management system.

AP Environmental Science and AP Psychology tutoring:

Private, individual, online tutoring sessions will be held with an AP teacher for the ten weeks leading up to the 2017 AP exam administration in Canvas. (Weeks of 2/20/17-4/24/17) Students can sign up for five hours @$140/hr (total $700) or ten hours @120/hr (total $1200) of private review sessions to be scheduled between the student and the instructor. Students who are successfully enrolled will be contacted by their assigned instructor to choose days/times for the sessions, which will likely be scheduled as hourly sessions on weekday evenings between 7-10pm. Instructors will make every effort to provide sessions in a video conference format through Canvas. Students with slow connections may need to use the discussion board feature. Students are expected to attend sessions on time, to have access to an e-text or textbook that is commonly used for the course, and to regularly complete review tasks outside of the scheduled tutoring sessions. While we cannot guarantee a given exam score, we can guarantee that our experienced AP instructors have a demonstrated history of teaching students who have scored a "5" on the AP exam.