2024 COURSE DESCRIPTIONS

Summer Academic Day Camp

PreK - Grade 6

Half-day morning, Half-day afternoon, and All-day courses available

CTD Day Camps for PreK – Grade 6 provide academically advanced concepts in a fun yet challenging environment. Each course offers students a chance to create, build, imagine, and be academically challenged in ways that they may not have experienced in other settings. We recommend that your child choose classes that spark their interest and excitement. Students should select courses based on the grade they will enter in fall of 2024.

Tuition Half-day: \$375 One-Week All-day: \$720 Two-Week All-day: \$1,500 	
One-Week Courses, PreK – Gr. 5 PreK – Gr. 2: A.M. & P.M. Grades 1 - 5: All Day Program Dates June 24 - 28 July 8 - 12 July 15 - 19 July 22 - 26 July 29 - Aug 2	Two-Week Courses, Gr. 5-6 All Day Program Dates July 8 - 19 July 22 - Aug 2
TimesA.M.9 a.m 12 noonP.M.1 p.m 4 p.m.All-Day9 a.m 4 p.m.For students who stay for a full day, a one-hour supervised lunch/recess period isincluded. Students bring their own sack lunch.	

For locations and additional information: Visit <u>https://www.ctd.northwestern.edu/1-2-week-academic-day-</u> camps-summer

Day Camp application: Visit <u>https://my.ctd.northwestern.edu/</u> to begin your application. For more information, please visit the website or contact <u>CTD-admissions@northwestern.edu</u> Admission Criteria, PreK – Grade 2

PreK – Grade 2 courses are open enrollment: There are no test scores or further documentation required for participation. PreK students must be age 4 by the start of class.

Admission Criteria, Grades 3 - 6

Day Camp Course Subject-Area	90 th percentile or higher on a nationally normed grade-level assessment such as NWEA / MAP in:
English & Language Arts	Verbal / Reading
Social Sciences & Humanities	Verbal / Reading
Economics & Entrepreneurship	Verbal / Reading OR Math, on a course by course basis
Science	Math OR Verbal / Reading
Technology & Engineering	Math OR Verbal / Reading
Mathematics	Math
Leadership	Reading

Portfolio applications are accepted for grades 3 – 6. A portfolio application requires a teacher recommendation and a recent grade report. For more detailed information regarding Admission Criteria, please visit the <u>CTD Eligibility Page</u>.

PreK - K / Half Day Courses, One Week

Open Enrollment, must be four years old at the start of class.

Half-Day Morning and Afternoon Courses

A.M. 9 a.m. – 12 noon P.M. 1 p.m. – 4 p.m.

Pirates and Treasures (PreK – K)

By reading and listening to fiction and nonfiction picture books, students discover both facts and tales of pirates and treasures. Study the historical forces that surrounded pirating in different parts of the world during different time periods and engage in role-play as pirates sailing using handmade tools like a compass or telescope. Develop writing skills and organize ideas through creative storytelling of pirate adventures. *SUBJECT AREA: English & Language Arts*

Puppet Productions (PreK – K)

Puppets help us become better storytellers. Young storytellers learn about characters, story sequence, and the structure of puppet plays. Through storytelling, role-playing, and other interactive activities, students extend their organizational and language skills. In collaboration with their classmates, students create, share and perform original stories. SUBJECT AREA: English & Language Arts

Dino Dig (PreK – K)

Young scientists discover how paleontologists unearth answers by digging in the dirt. Work with fossils, bones and other materials, and learn what dinosaurs looked like, how they moved, what they ate, their living conditions and other fascinating facts. This interdisciplinary course includes engaging activities in the areas of language arts, geography, math and science.

SUBJECT AREA: Social Sciences & Humanities, Science

Mind Your Business (PreK – K)

Business-minded students learn about different aspects of running a small business in this introductory course. Building on their experience as customers, students imagine themselves on the other side of the counter where they clock costs, set prices, and calculate revenue and profits to kick start computational math skills as well as critical thinking about the role of businesses in their community. Playful exposure to mathematical thinking and applying computation skills in a real-world context contribute to a foundation for later study of business, mathematics, and other STEM fields. *SUBJECT AREA: Economics & Entrepreneurship*

Earth and Sky (PreK – K)

Why is the sky blue? Do stars twinkle? Young astronomers discover the answers to these and many other questions as they work together to study the sun, moon, constellations and the inner and outer planets. An interdisciplinary approach, combined with engaging activities, enhances understanding of the solar system and Earth's place in it. *SUBJECT AREA: Science*

Surprising Spills and Messes (PreK – K)

Pour, stir and spill! Students create their own crazy chemistry concoctions, observe the amazing (sometimes messy) results, and document their discoveries and conclusions. Aspiring scientists develop their reasoning skills through exploration of the properties of liquids, solids and gases, including differences in shape and boundaries. SUBJECT AREA: Science

Insect Allies (PreK - K)

Don't swat that syrphid fly! Insects are actually your allies when you garden. Learn the roles of ladybugs, damsel bugs, monarch butterflies, mason bees, braconid wasps and more. Students discover the connections between horticulture and entomology as they collect data, record information and draw conclusions from newfound knowledge. SUBJECT AREA: Science

Underwater Explorations (PreK – K)

Students view the open water through a systems lens in this introductory earth science course. Curiosity and scientific thinking rise to the surface through playful hands-on activities that reveal the ocean's features and its importance to the planet's health. This course provides opportunities for students to explore cause and effect and engage in inquiry and systems thinking, all of which support ongoing study of life and lab sciences. *SUBJECT AREA: Science*

Volcanoes and Earthquakes (PreK – K)

Stand still for a moment—can you tell that Earth's surface is actually moving? Sometimes slowly and sometimes quickly, Earth's crust shifts each moment of each day. Young geologists investigate the theory of plate tectonics and create models and diagrams of volcanoes and earthquakes. Students also discover how scientists use technology to measure and predict eruptions and quakes. The skills and concepts introduced in this course lay the foundation for future study of earth and physical sciences. *SUBJECT AREA: Science*

Building Bridges (PreK – K)

Students learn about the structure of bridges as they playfully explore how bridges are used. Students expand their design-thinking skills to create their own bridges and test their bridge's strength. Avid builders explore the physics behind bridge design as they investigate the world of engineering and architecture. SUBJECT AREA: Technology & Engineering, Science

Construction Site (PreK – K)

Students take on the role of construction workers as they learn about construction sites and build models of skyscrapers, houses, or other structures of interest. Through imaginative play and hands-on building with a variety of materials, students develop design-thinking and spatial reasoning skills. The skills and concepts introduced in this course lay the foundation for future study of engineering and design. *SUBJECT AREA: Technology & Engineering*

CODUCT AREA. TECHNOlogy & LIIGHIECHING

Robots & Coding (PreK-K)

Students leave screens behind to play and learn about coding with a variety of friendly robots that need instructions which can only be created by hand. Students engage in storytelling, building, and tangible programming activities to extend and express their understanding of computer coding concepts, measurement, and mapping skills. Computational thinking and spatial reasoning skills used in this course are foundational for the study of computer science, mathematics, and engineering.

SUBJECT AREA: Technology & Engineering

Fast & Faster (PreK – K)

Do you have the need for speed? Engineers use physics and technology to design machines that go incredibly fast. Students explore the science behind what propels cars, planes and other machines to move at extraordinary speeds. Through collaborative project work, including building and other interactive activities, students learn basic physics principles around motion and velocity.

SUBJECT AREA: Science, Technology & Engineering

Geo-Measurement (PreK – K)

What is measurement? How do we measure? The conceptual and mathematical underpinnings of geometry and measurement are the focus of this hands-on math class. Young mathematicians discover the many ways to determine the size of simple objects using both standard and non-standard forms of measurement. Students create their own measurement tools and explore various aspects of the lines and angles of two- and three-dimensional shapes. Geoboards, tiles, and measurement tools are used to investigate distance, perimeter, and volume, while exploring these topics.

SUBJECT AREA: Mathematics

Math for Sports (PreK – K)

What's the score? How far is the goal? Why are there trapezoids in hockey, circles and rectangles in basketball? Math can tell us about scores and athletic performance. Students run, kick, shoot and score, then measure, calculate, and analyze to demonstrate how math and sports are on the same team. Computational thinking and data analysis skills used in this course are foundational for the future study of mathematics. *SUBJECT AREA: Mathematics*

Playground Math (PreK – K)

Students explore the geometry of playground equipment such as slides, monkey bars and climbing structures. Students expand math knowledge and spatial reasoning skills by creating a model of their original playground design. This course fosters the interests of avid builders and introduces engineering and design practices. SUBJECT AREA: Mathematics

Grades 1 - 2 / All-Day Courses, One Week

Open Enrollment

Half-Day Morning and Afternoon Courses

A.M. 9 a.m. – 12 noon P.M. 1 p.m. – 4 p.m.

Comic Book Characters (Gr. 1-2)

Graphic novels and comic books cover topics from superheroes to historical events, capturing complex ideas through a unique combination of text and illustrations. As students learn the elements of graphic novels and comics, they focus on applying these elements to build strong characters and plot lines in their own stories. Students build their skills as writers to organize and express their own ideas with words and images.

SUBJECT AREA: English & Language Arts

Labyrinths & Mazes (Gr. 1-2)

From ancient mythology to autumn crops to cereal boxes, mazes continue to intrigue us. Learn to navigate the differences between labyrinths and mazes--and create your own to share along the way. Students will discover mazes and labyrinths from cultures around the world. What drives a culture to create a moving meditation or a coaster-sized puzzle? Young game masters will identify, draw, and design various types of labyrinths and mazes before strategizing with peers to build a life-size, walking labyrinth.

SUBJECT AREA: Social Sciences & Humanities, Mathematics

Time Travelers (Gr. 1-2)

How does an event in the past influence the future? What was it like to travel the Oregon Trail? Have you ever wondered what it would have been like if humans lived alongside dinosaurs? What was communication like before telephones? Travel back in time to interesting pivotal moments in Earth's history to uncover what life was like in the past. Explore the impact that living things have had on the Earth. Imagine and compose narratives from the point of view of both humans and creatures throughout history, using role-play, visualization and creative writing.

NOTE: Students do NOT need to be able to write independently to be in this course.

SUBJECT AREA: Social Sciences & Humanities, English & Language Arts

Young Entrepreneurs (Gr. 1-2)

In this course, students learn to see a business not only as its brick and mortar or online presence, but as something that can be described and understood with numbers. Business rookies engage in both imaginative activities and analytical thinking as they build their computation and data analysis skills with budgets. Building data and calculation skills and applying them to a specific context are foundational for the ongoing study of mathematics and science. *SUBJECT AREA: Economics & Entrepreneurship*

Mysteries of the Night: Nocturnal Animals (Gr. 1-2)

Are you a 'night owl?' Okapi, Gila monsters, bats, and owls are among the many nocturnal animals who prefer to be active at nighttime that students learn about in this course. Through the use of scientific explorations, stories, and collaborative activities, participants discover common characteristics of night creatures and their habitats while unlocking some of the mysteries surrounding species that are awake while most people are asleep. Find out how and why these animals have adapted to this lifestyle.

SUBJECT AREA: Science, English & Language Arts

Science Spin-Offs (Gr. 1-2)

Did you know scientists have used materials made by NASA for tracking missiles in space to design invisible braces for teeth? Many technologies created for one purpose are transformed by scientists to benefit people in new ways. In this course students explore the worlds of invention and engineering to reimagine uses for various technologies. Students work together to make their own science spin-offs.

SUBJECT AREA: Science

Math & Engineering: Ancient Egypt (Gr. 1-2)

In this course, students are introduced to the math and building techniques used by the architects of the pyramids and temples of ancient Egypt. Skills in measurement, design thinking and spatial reasoning are strengthened as students imagine themselves along the Nile with historic tools, materials and a job to do. The design and problem-solving approaches used in this course are foundational for the ongoing study of engineering and architecture. *SUBJECT AREA: Technology & Engineering, Mathematics*

Cryptography and Spies Gr. 1-2)

Students learn about the surprising and sneaky role math plays in keeping or revealing secrets through encryption and decryption methods. Like other successful spies and cryptographers of history and today, students apply a series of logical and systematic steps to solve problems and build their algorithmic thinking skills. The computational thinking and investigational approach used in this course are foundational for the ongoing study of math, computer science and engineering.

SUBJECT AREA: Mathematics

All-Day Courses: 9 a.m. - 4 p.m.

Astronomy and Physics (Gr. 1-2)

Where are the stars during the day? Why is the universe constantly in motion? Can force overcome gravity? Discover which forces in the universe keep the planets in motion and explore the mysteries of our solar system. Conduct experiments to explore the effects of gravity and write lab reports, while becoming acquainted with the scientific method. *SUBJECT AREA: Science*

Life on Mars (Gr. 1-2)

Scientists have predicted that one day, a space colony will be established on Mars. Imagine you are an astronaut preparing to build and live in a space colony on Mars. What will you need to bring? How will you prepare your body? What will ensure the colony survives? Read fiction and nonfiction about the Red Planet. Make a plan to grow food. Build a prototype of the imagined colony in a strange new world. Extend creative writing skills and design thinking skills in researching, imagining and writing about planets and space travel. *SUBJECT AREA: Science, English & Language Arts*

Life Science: Blood & Bones (Gr. 1-2)

Young biologists investigate systems of cells circulating within the human body. Activities range from creating models of cells and organs to demonstrating the effects of exercise on circulation. This course develops scientific inquiry skills as students make connections between their experiences and new knowledge of the skeletal and circulatory systems. *SUBJECT AREA: Science*

Physics: Force and Motion (Gr. 1-2)

In this fast-paced course, students investigate and apply physics principles by designing and building marble mazes and vehicles that move. What begins as a question of speed becomes a fun ride on the road of creative reinvention, where design-engineering skills get better with every test drive. Can you win a marble maze race by going the slowest? Discuss physics examples from human history and the animal world. Skills in computational thinking, observation, and data collection are critical for the ongoing study of engineering, physics, and other lab sciences. *SUBJECT AREA: Science*

Engineering: Designing Sailing Ships (Gr. 1-2)

In this course, students imagine vessels on which to sail the seas and then set a course to learn about how ships are designed and built. Like naval architects, they examine the keels, hulls, and masts of a variety of ships and the methods used to assemble them, extending analytical and engineering skills throughout the process. The design and problemsolving approaches used in this course are foundational for the ongoing study of engineering and architecture. SUBJECT AREA: Technology & Engineering

Race Cars & Rockets (Gr. 1-2)

Indy 500 cars and space shuttle launches have long fascinated us. Humans' need for speed has inspired aerodynamic racing cars and rockets to go fast and crash safely. Young engineers explore the physics principles behind designing vehicles and discover what increases and decreases velocity and acceleration as they build and race their own homemade rockets and race cars—and try to crash them safely. *SUBJECT AREA: Technology & Engineering, Science*

Detective Math (Gr. 1-2)

A good detective looks for clues and investigates patterns to solve a mystery. Through interactive games and storyproblem riddles, sharpen your detective skills. Identify patterns to break math codes, apply problem solving strategies to decipher logic problems, and create simple equations based on the clues found in story problems. Test your new math and deductive reasoning skills on other detectives by creating your own stories, riddles, and mysteries! *SUBJECT AREA: Mathematics*

Grades 3 - 5 / All-Day Courses, One Week

Emerald Tier Enrollment: visit the CTD Eligibility Page for details.

All-Day Courses: 9 a.m. – 4 p.m.

GRADES 3-4

Captain's Log: Star Date 2024 (Gr. 3-4)

Every mission of exploration and discovery is fueled by imagination and captained with critical thinking skills, and this course is no exception. Fiction and nonfiction texts inspire students to boldly go forward, and extend creativity and computational thinking skills through reading, writing, and teamwork. Consider how robots help us in space as you imagine and write about daily life on the International Space Station. The comprehension, writing and logical thinking skills called for in this course support later study in the areas of computer science, creative writing and the humanities. *SUBJECT AREA: English & Language Arts, Social Science & Humanities*

Playwriting and Poetry (Gr. 3-4)

Use your imagination to bring your story to life as you write and apply the principles of scriptwriting to tell an inspiring or surprising story. Collaborate with other young writers. Brainstorm, draft and revise your work as you learn how poems can be ways to tell a story that needs to be heard, real or fictional. Study a diverse group of renowned writers as you learn to hone your craft.

SUBJECT AREA: English & Language Arts QUALIFYING AREA: Reading

Mythology (Gr. 3-4)

Mythology provides a window to the world—past and present. Explore the world of gods, goddesses and other mystic beings through the legends of ancient Greece and Rome, and what they teach us about modern worldviews and truths. As you examine literary elements, discover why these stories continue to fascinate readers and scholars today. Study different themes in mythology and finish the week by writing your own myth! *SUBJECT AREA: English & Language Arts*

QUALIFYING AREA: Reading

Debate: Fairy Tale Ethics (Gr. 3-4)

Revisit classic fairytales to explore topics of fairness, justice and human rights. Work individually and in teams to pose, research and answer ethical questions found in well-known children's stories. Develop preliminary debate skills and practices, and attempt to craft airtight arguments.

SUBJECT AREA: Social Science & Humanities, English & Language Arts QUALIFYING AREA: Reading

Chemistry: Liquids & Mixtures (Gr. 3-4)

Aspiring scientists develop their reasoning skills through exploration of the properties of liquids, solids and gases, including differences in shape, boundaries, visibility and stability. Students create their own crazy concoctions, observe the amazing (sometimes messy) results, and document their discoveries and conclusions. Playful exposure to the scientific practices of inquiry, including detailed observation and documentation of variables and outcomes, are foundational for the ongoing study of all sciences.

SUBJECT AREA: Science

QUALIFYING AREA: Reading OR Math

Under the Microscope (Gr. 3-4)

Using microscopes and other scientific tools, students explore tiny worlds outdoors. Fascinating details wait to be discovered when ants, worms, plants, soil and water are examined in sharp focus. Students gather and examine samples under a microscope, and sketch what they find. Using natural materials, they can then build a dioramic view of the tiny world they've discovered. *SUBJECT AREA: Science*

SUBJECT AREA: Science QUALIFYING AREA: Reading OR Math

Zoology: Animal Behavior & Biology (Gr. 3-4)

What behaviors do animals use to claim a territory, find food, avoid predators, find mates and migrate? Through hands-on experiments and research, learn about the unique behavioral adaptations that animals have in their ecosystems. Track the movement of birds and animals of the land and sea to evaluate how animal migration and behavior is influenced by natural phenomena such as weather patterns, landforms or seasonal changes. *SUBJECT AREA: Science*

QUALIFYING AREA: Reading OR Math

LEGO® Metropolis (Gr. 3-4)

In this class, students study unique architectural designs to inspire original LEGO ® structures. Explore the impact of environmental factors such as climate when choosing building materials, or availability of space when deciding whether to build out or up. As they sketch, plan, map, and build a class metropolis with LEGO® architecture bricks, aspiring engineers consider what external factors led to the design of a greenhouse geodesic dome, or the gherkin-shaped city hall in London. Then, apply your new knowledge to build a mini-metropolis out of LEGO® bricks! *SUBJECT AREA: Technology & Engineering QUALIFYING AREA: Reading OR Math*

Digital Architects (Gr. 3-4)

How do architects use math, physics and art to design buildings? Explore the architectural design process through handson building projects, blueprint sketching and SketchUp- Make® 3D modeling software. Novice architects investigate how buildings come to be and how people interact with the built environment. Using famous and historically significant architecture for inspiration, students experience how math and art come together as they design and create their own building models.

SUBJECT AREA: Technology & Engineering QUALIFYING AREA: Reading OR Math

Dimensions of Geometry (Gr. 3-4)

In this course, students complete playful challenges and hands-on projects that satisfy their inner puzzle master and call for using spatial visualization skills to extend their understanding of geometry. Exploring, creating, and finding new ways to play with objects in two and three dimensions build students' spatial reasoning skills important for later study of mathematics, engineering and other academic areas.

SUBJECT AREA: Mathematics QUALIFYING AREA: Math

Math Essentials (Gr. 3-4)

Students with a strong math foundation will enjoy applying their expertise in this class as they create and solve problems using all four basic operations. Collaborate to problem-solve and apply reasoning through a variety of tasks, including real-world inquiry problems, hands-on math puzzles, and logic games. Work with integers, explore ratios, and identify factors and multiples. Learn new vocabulary with which to explain your solutions. Become an expert in essential math skills and strategies. These skills are a passport to adventures in mathematics!

QUALIFYING AREA: Math

Engineering: Building Skyscrapers (Gr. 3-4)

Students explore the challenges faced by architects of tall towers and stupendous skyscrapers as they design and build models that express ideas from their own up-and-coming imaginations. Foundational knowledge of physics becomes stronger and design thinking skills soar with each iteration. The design and problem-solving approaches used in this course are important for the ongoing study of engineering and architecture. *SUBJECT AREA: Technology & Engineering*

QUALIFYING AREA: Reading OR Math

GRADES 4-5

Pen to Podium: Expert Writing & Speaking (Gr. 4-5)

Students explore what well-constructed essays have in common with effective oratory and how they are different. Students expand their writing and speaking skills as they identify and try out rhetorical techniques and articulate different perspectives on a topic. This course develops persuasive writing and speaking skills which are foundational for later studies of creative and informational writing.

SUBJECT AREA: English & Language Arts QUALIFYING AREA: Reading

Ambassadors in Action (Gr. 4-5)

Learn the art of diplomacy in our study of the United Nations. While acting as a delegate of a nation, analyze how countries are shaped and how international relationships evolve as the world changes. Research and understand the UN's organization and structure, and examine current challenges the UN faces. Serving as an ambassador at a mock Security Council session, advocate for your country's positions, and sharpen your research, writing and speaking skills. *SUBJECT AREA: Social Sciences & Humanities, Leadership QUALIFYING AREA: Reading*

The Chicago Skyline (Gr. 4-5)

How many ways can you read the Chicago Skyline? This class explores how history is connected to the built environment in Chicago's Loop and many rich neighborhoods. Students practice asking and researching important questions about culture, power and the past using print and online resources. Students will learn and utilize ArcGIS to produce neighborhood walking tours, virtual tours and maps.

SUBJECT AREA: Social Sciences & Humanities

QUALIFYING AREA: Reading

Stock Market (Gr. 4-5)

Students explore for themselves exactly what people are buying and selling and how stock markets work. By adding context and applying math skills, students grow their computational and critical thinking skills as they 'play the market.' This course provides opportunities for playful exposure to the computations involved in investments along with the interpretation of data, both of which are foundational for later studies of business and economics. *SUBJECT AREA: Economics & Entrepreneurship, Mathematics QUALIFYING AREA: Math*

3D Cell Biology (Gr. 4-5)

In this introductory biology course, students use LEGO® bricks and other 3D construction tools to learn about the structure of various living cells and of DNA molecules. Students examine cell structures and the laws of genetic inheritance, building up their systems thinking and knowledge of microbiology. This course develops skills related to inquiry, observation, problem-solving and teamwork, which are foundational for the ongoing study of life sciences. *SUBJECT AREA: Science*

QUALIFYING AREA: Reading OR Math

Physics: Structural Engineering (Gr. 4-5)

Students study concepts of structural engineering to discover how construction methods and materials make buildings that stand up to enormous forces or loads, including their own weight and the furniture and people inside. By creating small-scale models to investigate how materials and designs affect the strength of a structure, students strengthen their own design thinking skills along with their physics knowledge. The design and problem-solving approaches used in this course are foundational for the ongoing study of engineering and architecture. *SUBJECT AREA: Science, Technology & Engineering*

QUALIFYING AREA: Reading OR Math

Civil Engineering: LEGO Urban Design & Development (Gr. 4-5)

In this course, collaborate to plan and create buildings, roads and city infrastructures using building materials including LEGO® architecture bricks. Challenge and strengthen critical and design thinking skills as you consider how to meet a community's needs based on principles of urban planning and design engineering. The design and problem-solving approaches used in this course are important for the ongoing study of engineering and architecture. *SUBJECT AREA: Technology & Engineering QUALIFYING AREA: Reading OR Math*

Coding for Game Designers (Gr. 4-5)

Inspired by their own experience, students level up their coding skills to create games they want to play. Scratch programming skills lead to more advanced coding with Python as students apply logic and design skills to create, test and play their own digital games. Design thinking and coding skills are foundational for ongoing study of engineering and computer science.

SUBJECT AREA: Technology & Engineering QUALIFYING AREA: Reading OR Math

Math Behind the Olympics (Gr. 4-5)

Building a world-class Olympic team involves not only serious training, but serious math too. How do coaches decide which players to start each game or which athletes to enter into specific events? How do professional athletes use data to size up their competitors and prepare for matches? In this data analytics class, students learn how to use statistics to measure an athlete's performance over time and debate the merits of "scouts vs. stats" as they create their own dream Olympic team.

SUBJECT AREA: Mathematics QUALIFYING AREA: Math

Survivor Math (Gr. 4-5)

Students imagine themselves in a variety of situations and play themselves out of scenarios that require problem-solving skills to survive. Measuring, building, mapping and calculating ensure survival while they push students' spatial reasoning, algebraic thinking and computational skills in order to make it out alive. The application of math concepts in novel and intriguing contexts encourages creative mathematical thinking in any setting, which is foundational for future study in other disciplines such as physics, engineering and operations research.

SUBJECT AREA: Mathematics QUALIFYING AREA: Math

Aquatic Ecology (Gr. 4-5)

The health of an ecosystem affects more than just the animals, microorganisms and plants that live in it; it can also impact humans and our ability to access clean drinking water. But how do scientists use water samples to measure the health of an ecosystem? And what can nature teach us about the best way to clean water? Combining leadership skills with scientific inquiry, students discover how chemistry, biology and engineering come together to solve real-world challenges facing earth's water and the lives that depend on it. Through research and analysis students apply their knowledge to design filtration systems of their own.

SUBJECT AREA: Leadership, Science QUALIFYING AREA: Reading OR Math

Grades 5-6 / All-Day Courses, Two Weeks

Emerald Tier Enrollment: visit the <u>CTD Eligibility Page</u> for details.

All-Day Courses: 9 a.m. - 4 p.m.

Next Chapter (Gr. 5-6)

From developing ideas to completing final chapters, the process of writing a novel can be exciting and daunting. Study successful novels and plot a course for writing your own pieces. Daily peer critiques and revision workshops are utilized to tap into your creativity as you practice the focus and diligence necessary to begin to write a novel. SUBJECT AREA: English & Language Arts QUALIFYING AREA: Reading

Order in the Courtroom (Gr. 5-6)

Students explore the moral dilemmas at the core of fairy tales. Using the lenses of law and literature, students develop skills in oral argument, moral reasoning, mediation, conflict resolution and, of course, classic storytelling. Reasoning, constructing effective arguments and expert presentation are foundational for later study of humanities and social sciences.

SUBJECT AREA: Social Sciences & Humanities, English & Language Arts QUALIFYING AREA: Reading

Business and Social Entrepreneurship (Gr. 5-6)

Do you think business can be a key player in transforming the world for good? Explore topics including corporate philanthropy, business for social impact, venture philanthropy, the foundation sector, grantmaking and more. Learn from experts who employ social responsibility across business and nonprofit organizations. Discover your passion and affect change with increased understanding, knowledge and skills of the social enterprise sector. *SUBJECT AREA: Economics & Entrepreneurship, Leadership*

QUALIFYING AREA: Reading OR Math

Rollercoaster Physics (Gr. 5-6)

Whether it's the Kingda-ka's 456-foot climb or its ability to travel at 128mph in 3.5 seconds that excites riders, students learn how favorite amusement park rides make riders feel light in the air one moment and then pushed down into their seat the next. Students buckle up for a fast-paced adventure in the laws of physics as they investigate topics such as the law of inertia and centripetal acceleration, designing and building a variety of amusement park thrills. *SUBJECT AREA: Science, Technology & Engineering QUALIFYING AREA: Reading OR Math*

Zoology: Evolution & Anatomy (Gr. 5-6)

The animal kingdom is vast and often mysterious. Students learn the basics of animal biology related to structure and physiology. Students investigate the evolutionary mechanisms that lead to the diversity of vertebrate and invertebrate animals. While conducting hands-on and virtual dissections and fieldwork, students identify, compare and contrast the critical features used to classify animals into major groups.

SUBJECT AREA: Science QUALIFYING AREA: Reading OR Math

Green Design & Architecture (Gr. 5-6)

In this course, students design and model their own innovative green design and architecture projects. As they research and then apply LEED (Leadership in Energy and Environmental Design) guidelines to their work, students develop their own mathematical thinking and visual-spatial reasoning skills. The environmental science, design and problem-solving approaches used in this course are foundational for the ongoing study of other sciences, engineering and architecture.

SUBJECT AREA: Technology & Engineering QUALIFYING AREA: Reading OR Math

Data Detectives: Investigation Patterns (Gr. 5-6)

Data is everywhere. Every time we post to social media, search the internet, or even make a phone call, our information is stored by digital devices. All of this data can be analyzed by data scientists to enhance our quality of life, such as improving the performance of our computers, offering personalized healthcare, or optimizing traffic signals. In this project-based course, students learn how data scientists are really more like data detectives who investigate datasets to uncover hidden patterns. Students learn basic statistical content and apply their knowledge to analyze a dataset of their own choosing. Emphasis will be placed on problem-based learning and projects will largely be based in areas of student interest.

SUBJECT AREA: Mathematics QUALIFYING AREA: Math

The Math Behind Change: A Study of Slope (Gr. 5-6)

Change is something we see everywhere, not only in nature or over time. Everything changes. We can analyze and study this by calculating slope. Students study real world issues, such as an increase in spending, the change in the rise of the hills on a ski course, or the incline of a rollercoaster. Students will explore these concepts as they learn how slope can help to analyze change. This course is a great introduction for students interested in Pre-Algebra. *SUBJECT AREA: Mathematics QUALIFYING AREA: Math*