Welcome to the 2018 Summer Program

The Center for Talent Development (CTD) Summer Program allows gifted students to delve deep into a subject of interest, build upon their strengths, and connect with a community of peers.

From fast-paced enrichment options to accelerated, credit-bearing offerings, there is something for everyone from age 4 through grade 12.

In this catalog, you will find brief descriptions of each CTD Summer Program, 2018 program dates, and course descriptions.

The catalog is a companion piece to our website. All program details—including eligibility criteria, tuition and fees, admission requirements, financial aid process, and the online application—are located on the CTD website at www.ctd.northwestern.edu. Click on “Programs” in the navigation bar or scroll down the home page to find the Summer Program icon.

Any questions? Please contact us!

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Follow Us
Web www.ctd.northwestern.edu/summer2018
Blog ctd.northwestern.edu/blog
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Twitter @CTDatNU

Center for Talent Development has been accredited as a nonpublic supplementary school by the North Central Association Commission on Accreditation and School Improvement (NCA CASI) since April 1, 1994. NCA CASI is recognized by the U.S. Department of Education and has more than 100 years of experience in improving educational quality.
What Makes the CTD Summer Program the Best Choice for You?

The fun and friendships experienced at CTD are amazing, but there’s so much more. Because CTD is part of Northwestern, a world-class research university, excellence is our standard of program quality.

CTD’s Director, Dr. Paula Olszewski-Kubilius, is a faculty member in Northwestern’s School of Education & Social Policy and an internationally recognized expert in gifted education. CTD is comprised of expert educators and program administrators with the experience, knowledge, and passion to help children develop their exceptional talents in programs tailored to their needs.

- **A unique blend of enrichment and credit-bearing program and course offerings that exemplify CTD’s talent development philosophy.** CTD’s signature approach to talent development provides a personalized approach to student development and academic growth. CTD guides students and families along program pathways, which promote intellectual, emotional, and social growth from emergent talent to expertise.

- **Deep expertise in gifted education.** CTD is a leading gifted education research center. What we know about best practices is applied to all of our programs. Read more about our research at ctd.northwestern.edu/research.

- **Rigorous, accredited courses backed by one of the world’s most respected universities.** CTD is part of Northwestern’s School of Education & Social Policy and is accredited by the North Central Association Commission on Accreditation and School Improvement. Additionally, all Advanced Placement® courses are approved by the College Board.

- **Exceptional educators and a supportive learning community.** CTD instructional staff members are experienced educators and content experts. They are skilled in best practices, including differentiated instruction, curriculum compacting, inquiry-based learning, and content acceleration. All staff, from educators and residential teams to administrators, build a strong, supportive community of diverse learners from around the United States and the world.

- **Sustained engagement with the CTD community and access to valuable resources.** Enrolled students and their parents receive a one-year subscription to CTD Backpack, an online learning community and resource library curated by CTD staff.
Choose a program based on student’s grade as of January 1, 2018.

Age 4 through Grade 4
- **Leapfrog & Spark Programs** – Half-day and all-day, weeklong courses offered in Chicago, Evanston, Elmhurst (Spark only), Lake Forest, Naperville, and Palatine, Illinois

Grades 4 through 6
- **Spark Program** – All-day, weeklong courses (grades 3 & 4 only) offered in Chicago, Evanston, Elmhurst, Lake Forest, Naperville, and Palatine, Illinois
- **Solstice Program** – Two-week enrichment courses (residential or commuter) offered in Evanston, Illinois, on the campus of Northwestern University and in Elmhurst, Illinois, on the campus of Elmhurst College (commuter only)
- **Apogee Program** – Three-week, fast-paced enrichment courses (residential or commuter) offered in Evanston, Illinois, on the campus of Northwestern University

Grades 6 through 12
- **Accelerated Summer Option** – Nine-week, challenging online courses in a highly accelerated format

Grades 7 and 8 (Grade 9 on a case-by-case basis)
- **Spectrum Program** – Three-week, fast-paced enrichment and honors-level credit courses (residential or commuter) offered in Evanston, Illinois, on the campus of Northwestern University

Grades 9 through 12
- **Equinox Program** – Three-week or five-week accelerated honors and Advanced Placement® courses (residential or commuter) offered in Evanston, Illinois, on the campus of Northwestern University
- **Civic Leadership Institute** – Three-week service-learning and leadership program housed at Northwestern University in Evanston, Illinois, with service and residential activities offering students an unparalleled opportunity to explore Chicago

Students applying to the CTD Summer Program should select courses in a subject area of greatest interest and strength. Course content is advanced, typically one to two years above grade level.

Enjoy reading about this year’s courses! We look forward to receiving your application.
2018 Summer Program at a Glance

Application period opens January 3, 2018. Apply early!

Courses are filled on a first-come, first-served basis and many courses fill well before the application deadline.

STUDENTS AGE 4 (PreK) – GRADE 3 (grade level on January 1, 2018)

Leapfrog Program
Leapfrog provides enrichment courses for students who have demonstrated a keen, early interest in learning. Half-day or all-day, one-week courses are offered mornings and afternoons. Leapfrog program site locations are listed on the website.

New in 2018:
• All new Robotics and Coding half-day courses for PreK to grade 3!
• Challenge Lab expanded to 5 days per week at the Evanston site.

Program Dates & Locations
June 25–29
Week 1, Leapfrog Favorites in Evanston and Chicago, morning only; morning, afternoon, and all-day Leapfrog & Spark courses in Naperville

July 9–13
Week 2, all sites; morning, afternoon, and all-day courses

July 16–20
Week 3, all sites; morning, afternoon, and all-day courses

July 23–27
Week 4, all sites; morning, afternoon, and all-day courses

Sites
Chicago, Evanston, Lake Forest, Naperville, and Palatine. Availability of courses varies by site.
2018 Summer Program at a Glance

STUDENTS GRADES 4-6* (grade level on January 1, 2018)
Three program options: Spark* (1 week), Solstice (2 weeks), or Apogee (3 weeks)

There are multiple program offerings for students in grades 4 through 6 because of the varied academic, social, and developmental needs of students in this broad age group. Select the appropriate program based on your student’s academic needs and social-emotional readiness, particularly when considering the Solstice or Apogee residential program option.

Spark Program
Spark is a week of fun, mind-stretching learning experiences for students in grade 3 or 4. Spark program site locations are listed on the website.

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<tr>
<th>Program Dates &amp; Locations:</th>
<th>Naperville</th>
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<tr>
<td>Chicago</td>
<td>Monday, June 25 – Friday, June 29</td>
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<td>Evanston</td>
<td>Monday, July 9 – Friday, July 13</td>
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<tr>
<td>Lake Forest</td>
<td>Monday, July 16 – Friday, July 20</td>
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<td>Palatine</td>
<td>Monday, July 23 – Friday, July 27</td>
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Solstice Program
The Solstice program offers enrichment courses in a two-week timeframe perfect for extended study of a subject. Students may reside on campus at Northwestern University in Evanston, Illinois, or commute from home.

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<th>Program Dates &amp; Locations</th>
<th>Northwestern University, Evanston, IL (residential or commuter)</th>
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<tr>
<td>Elmhurst College, Elmhurst, IL</td>
<td>Sunday, July 1 – Friday, July 13</td>
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<td>Sunday, July 15 – Friday, July 27</td>
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Apogee Program
The three-week Apogee program gives students the opportunity to take a fast-paced course that hones critical academic skills and deepens knowledge and understanding of a particular subject. Apogee also includes two graded, high-school-level math and computer science courses (Algebra I & Java). Students may choose to commute, or to reside on the Northwestern University Evanston, Illinois, campus.

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<tr>
<td>Sunday, July 1 – Friday, July 20</td>
<td>Sunday, July 22 – Friday, August 10</td>
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* Students in grade 3 may apply for Spark courses.
**Accelerated Summer Option**

CTD offers a selection of challenging online courses in a highly accelerated format. Specialized Accelerated Summer Option versions of popular CTD Honors, Honors Electives, and AP® courses for Summer 2018 will open for enrollment in February 2018.

**Online Program Dates**

Friday, June 15 – Friday, August 17

**STUDENTS GRADES 6–12** (grade level on January 1, 2018)

**Equinox Program**

Equinox combines fast-paced, advanced coursework with the chance to explore college and careers in a hands-on way within a community of learners. Equinox’s high school and college-level course offerings provide academic rigor and the opportunity to earn high school credit at the honors and Advanced Placement® (AP) levels through Center for Talent Development. Students can experience life on the Northwestern University, Evanston, Illinois, campus as a residential participant or commute from home.

*Students in grade 9 may apply; applications will be considered on a case-by-case basis.*

**Program Dates**

Sunday, July 1 – Friday, July 20
Sunday, July 22 – Friday, August 10

**Northwestern University, Evanston, IL**
(residential or commuter)

**Spectrum Program**

Spectrum offers three-week, in-depth enrichment and accelerated honors courses that stretch young minds and provide challenge beyond grade level. Honors courses bear high school credit through Center for Talent Development. Students may reside on campus at Northwestern University in Evanston, Illinois, or commute from home.

**Program Dates**

Sunday, July 1 – Friday, July 20
Sunday, July 22 – Friday, August 10

**Sunday, July 1 – Friday, August 3** (5-week courses)

**STUDENTS GRADES 7 & 8** (grade level on January 1, 2018)

**Civic Leadership Institute**

The Civic Leadership Institute (CLI) is a powerful capstone experience, which engages young leaders in community issues through hands-on service and academic study. CLI offers excellent preparation for college and careers, allowing students to develop the knowledge, experience, and skills they need to make a positive impact on the world. CLI combines an innovative service-learning curriculum with an unforgettable residential experience and an unparalleled opportunity to explore Chicago.

*Students in grade 9 may apply; applications will be considered on a case-by-case basis.*

**Program Dates**

Sunday, July 8 – Friday, July 27

**Northwestern University, Evanston, IL**
(residential only)

**STUDENTS GRADES 9-12** (grade level on January 1, 2017)
Courses are offered in Chicago, Evanston, Elmhurst (Spark courses only) Lake Forest, Naperville, and Palatine, Illinois. For specific locations, please see the Summer Program website.

There are three different types of course offerings:

- **Half-day Morning** – Leapfrog morning courses meet from 9 a.m. to 12 noon daily for five consecutive days (Monday through Friday).
- **Half-day Afternoon** – Leapfrog afternoon courses meet from 1 p.m. to 4 p.m. daily for five consecutive days (Monday through Friday).
- **All-day** – All-day Leapfrog and Spark courses are available for students in grades 1, 2, 3, or 4. All-day courses meet from 9 a.m. to 4 p.m. with a break for lunch. Please note: All-day Spark courses at Elmhurst College meet from 8:30 a.m. to 3:00 p.m. with a break for lunch.

Families may apply to a morning course, an afternoon course, or both. All students enrolled in both a morning course and an afternoon course are automatically enrolled in the 12 noon to 1 p.m. lunch/recess at no extra cost.

**Admission Criteria for Young Children**

CTD does not require our youngest students (age 4 or 5 with limited school experience applying to PreK/K courses) to have test scores for admission. This option is intended to provide new enrollment opportunities for families with young children who don’t have ready access to individual testing services. See the Leapfrog Summer Program website for details. Students who are six years old by the start of or during a course session must apply for K/1 classes, and are not eligible for PreK/K classes.

“My child came home excited and energetic; he loved giving us the details of the class and often throughout the week would think about what he was going to do in the next class. ”

– 2017 parent
Leapfrog Favorites

A select group of our most popular Leapfrog courses will be offered the week of June 25-29 at our Chicago, Evanston, and Naperville locations. In addition, a Spark technology course is available for students in grade 3 or 4 in Naperville. See course chart for details.

Week 1: June 25-29

Course Descriptions

English & Language Arts Favorites

Students with strong verbal/reading ability may enroll in an English & Language Arts course. Courses correspond with a child’s grade level as of January 1, 2018.

(PreK/K) If I Ran the Zoo

Students take on the roles of zookeepers and veterinarians to make important decisions about animals in their zoo and how to care for them. Young zookeepers conduct research and design animal habitats, create signs, and discuss ethical issues related to zoo life and endangered animals. Early literacy skills are developed through drawing, dictation, and emergent writing.

(K/1) Click! Telling Stories with Photos

Photographs are both inspiration and illustration as students create original stories and poems. Students snap their own photos with devices provided in class, and they may also collect photos from families, magazines, and other sources. Students learn how to identify and describe important elements of visuals, such as mood and framing. They also discuss the importance of descriptive language and word choice.

(K/1) African Safari

As photographers on a safari trip to Kenya, students learn about African topography and the animals that are found in Kenyan game reserves. Students create and map their own fictional game reserve, research the local Massai culture, and create a safari guidebook. Along the way, the wildlife photographers encounter a variety of challenges that they discuss, research, and solve together.

(2/3) Journalism 101: How to Write a News Story

Aspiring journalists conduct research, think critically about reliable sources, and separate fact from opinion. They develop techniques for conducting interviews and asking questions about a topic. Students incorporate key nonfiction writing skills to write articles about topics of interest.

Science Favorites

Students with strong verbal/reading or math ability may enroll in a Science course. Courses correspond with a child’s grade level as of January 1, 2018.

(PreK/K) Magnets & Mirrors: Magical Experiments

Magnets have the power to make objects move as if by magic. Mirrors can play tricks with how we view the world. Hands-on science experiments teach children core concepts of physical science, such as magnetism, gravity, polarity, reflection, and magnification.

(PreK/K) Big Cats: Lions, Tigers, & More

As novice zoologists, students explore the captivating world of big cats. Students “travel” across the globe to observe and discuss how these astounding animals interact with their habitat and each other. Through research and hands-on activities, students are introduced to these marvelous mammals and gain an appreciation of wildlife conservation.

(K/1) Fast & Faster: Things that Go

Do you have the need for speed? Engineers use physics and technology to design machines that go incredibly fast. In this course, students learn the science behind what propels cars, planes, and other machines to move at extraordinary speeds. Through collaborative challenges and other hands-on activities, students learn basic physics principles related to motion and velocity.
(1/2) Take-Aparts: Deconstructing Science
Taking apart a clock or a wind-up toy reveals fascinating details about how simple machines work and function. Students learn about mechanical engineering and introductory physics by deconstructing and analyzing a variety of devices. They’ll also study and observe concepts such as levers and pulleys, screws and springs, power and motion, and the structure and function of batteries.

Technology Favorites
Students with strong verbal/reading or math ability may enroll in a Technology course. Courses correspond with a child’s grade level as of January 1, 2018.

Coding Computations: Computational Thinking through Coding
(No coding experience needed for Coding Computations courses.)

NEW! (PreK/K) Pattern Power: How Patterns Rule Code
Students create patterns using tangible tools (such as beads on a string), audio tools (such as notes in a song), and virtual tools (such as coding apps on a touchscreen). Pattern play leads to a deeper understanding of both coding concepts and computational thinking.

NEW! (K/1) Super Sequence: Why Order Matters in Coding
First, next, last. If, then, when.
Every day we create sequences with our words and gestures. Computer programmers create sequences with code. In this course, students learn to code using apps such as Lightbot, Cargobot, and SpriteBox, then extend their learning beyond the screen with sequencing games that reveal the structure of codes.

NEW! (1/2) Algorithm Adventure: Code as a Set of Instructions
An algorithm is a step-by-step process to complete a task. Students use coding apps like Scratch, Jr. and Cato’s Hike to program their own algorithms. Away from the screen, collaborative projects, such as baking cookies or pitching a tent, challenge students to create algorithms using many different symbolic languages.

NEW! (2/3) Build It, Break It: Learning about Code by Taking It Apart
Computational thinking requires decomposition, the ability to take an idea and break it down into smaller parts for deeper understanding and analysis. In this course, students create coding projects using Hopscotch and then explain their thinking to other programmers by taking apart their code. Tangible materials like 3D puzzles challenge students to demonstrate their learning using novel tools.

NEW! (2/3) Robot Navigation
This course combines a variety of navigational challenges including programming on a grid, synchronization of movements, avoiding obstacles, and predicting traffic patterns. Students work with tech tools such as Hexbugs, Ozobots, and Sphero robots to create programming projects and detailed maps.

Mathematics Favorites
Students with strong math ability may enroll in a Mathematics course. Courses correspond with a child’s grade level as of January 1, 2018.

(PreK/K) Playground Math
How do you measure the angle of a slide? Will a bigger or smaller angle send you down the slide faster? What shapes can be found in the monkey bars and climbing dome? Students are introduced to a variety of geometry concepts and tools as they explore the playground first-hand before designing and building their own model playground.

(PreK/K) Mini Mathletes
Mathematical thinking involves recognizing patterns, identifying sequences and deductive reasoning. Through playful problem-solving challenges, students work together to apply these skills and use new tools such as number lines and functions.

(K/1) Math for Sports
What’s the score? Math can tell us that and so much more about athletic performance. Students run, kick, shoot, and score, then measure, calculate, analyze and estimate to demonstrate how math and sports are on the same team.
Challenge Lab, a CTD Makerspace for Grades 1-4

No test scores or portfolio required for Challenge Lab enrollment. Sessions are offered Monday through Friday afternoons, 1 p.m. to 4 p.m. at the Evanston Roycemore site. Enroll your child in a single three-hour session or choose multiple sessions. You may also apply for five days at one time.

Description
A “makerspace” is a learning workshop equipped with a variety of materials and tools for making things. In a makerspace, students apply design, engineering, and problem-solving skills. Each unique project reflects the interests and ideas of each maker.

In the CTD makerspace, instructors offer questions, choices, and challenges to inspire students, and they encourage students to reflect on their process and extend their ideas.

The Challenge Lab space will provide a variety of work stations such as a digital work station, a woodworking station, a “loose parts” station with plastic and metal materials, and a research and inspiration station.

Challenge Lab Themes
Mondays: Build with Wood
Tuesdays: Tools & Hardware
Wednesdays: Things that Move
Thursdays: Form & Function
Fridays: Teamwork & Collaboration

All-Day Favorites
Leapfrog Half-Day Course Descriptions

English & Language Arts Courses
Students with strong verbal/reading ability may enroll in an English & Language Arts course. Courses correspond with a child’s grade level as of January 1, 2018.

You’re in the Story
(PreK/K) Ocean Explorers
As oceanographers, students learn about marine life and biodiversity. They learn how and why scientists study ocean life, and investigate ways to help preserve ocean habitats. Students imagine, draw, and write about life under the waves.

(K/1) Antarctic Explorers
As explorers and scientists on the coldest continent on Earth, students learn about the biodiversity of Antarctica and the animals living there, such as penguins and seals. Students imagine and create their own research station at the South Pole and produce guidebooks, articles, and stories about Antarctica.

Animals Friends & Foes
(PreK/K) Mouse Adventures: Tiny Habitats in Stories & Nature
Storybook mice fascinate readers with their tiny furniture and cozy little living spaces. Students explore how the homes of storybook mice compare to the habitats of real mice. Read-alouds and storytelling combine with an introduction to research skills, critical thinking, and creative writing.
(1/2) Shark Attack! Underwater Mythbusting
Sharks are the most feared creatures in the ocean, but actual shark attacks on people are very rare. As aspiring mythbusters, students research how and why sharks inspire fascination and fear, use critical thinking to determine the real facts, and document their findings and ideas with images and text.

Stories, Fact & Fiction
(PreK/K) Pirates & Treasures
Through fiction and non-fiction, students discover pirates and treasures, use maps, and hunt for clues. Students study the historical and cultural forces that surrounded pirating in different parts of the world at different time periods. To develop writing skills, students write, draw, and dictate journal entries and stories.

NEW! (K/1) Fantastical Creatures in Fact & Fiction
Students expand their reading, writing, and researching skills through the exploration of fantastic tales about mysterious creatures, such as the Loch Ness Monster and dragons. Students use a variety of sources to craft their own accounts of these eye-popping creatures in formats such as news reports and short stories.

NEW! (1/2) From Castles to the Death Star: Hero Quests in Fact & Fiction
Across the ages, people have created and shared stories about bravery, adventure, and overcoming challenges. Ulysses, Luke Skywalker, and Rey are well-known examples of heroes who faced the challenges of an amazing journey. But what hero stories are yet to be told? Students identify important elements of the hero archetype, and write a hero story of their own from history, from their imagination, or maybe even a hero story about themselves!

NEW! (2/3) World Mythologies
According to Chinese myths, how were clouds created? What’s the story behind the half-man, half-lion in Indian mythology? Who was Orpheus in Greek mythology, and what was important about his journey to the underworld? As students read and discuss various myths, they learn about symbols, themes, and the purposes myths have served across cultures. Students create their own myths as they explore events and natural phenomena through the actions of gods, goddesses, and other mythological characters.

Science Courses
Students with strong verbal/reading or math ability may enroll in a Science course. Courses correspond with a child’s grade level as of January 1, 2018.

Life Science
(PreK/K) Zoo Vets
Junior veterinarians classify and compare animals, with a focus on the unique needs and characteristics of wild animals living in zoos. Students also examine the importance of creating zoo habitats and diets that keep animals healthy and reflect the animal’s life in the wild.

(K/1) Blood & Bones: The Human Body
Young biologists investigate the systems of cells circulating within humans. Activities range from creating models of cells and organs to using inquiry to explore the effects of exercise on circulation.

(1/2) Grossology: Fascinating Systems of the Human Body
Gross, grosser, and grossest … The human body conducts fascinating and seemingly repulsive functions, but all serve a valuable purpose. From spit and vomit to sweat and snot, curious students engage in experiments and activities to study the various systems of the human body, the functions they serve, and the outcomes they produce. Discussions, research, and collaborative projects further challenge students to think critically and synthesize information.

(2/3) Brain Surgery
Young neurologists “go inside” the brain to analyze its systems and understand its connection to the rest of the body. Among other activities, students map the brain, experiment with senses, and use interactive web tools to investigate this amazing and complex organ.

Architecture & Engineering
(PreK/K) Building Bridges
Truss, arch, suspension, and more—young engineers learn about bridge structures and study famous examples from around the world. Students create their own bridge models based on the principles of physics and through the process of scientific inquiry.

(K/1) Building Canals & Tunnels
From the canals of Italy, Egypt, and Panama to tunnels for cars, water, and power lines, aspiring engineers consider the development of these important transportation systems. Students design and construct models and discuss their planning process with peers and instructors.

(1/2) Designing & Building Skyscrapers
How do you build a 200-story building so it won’t topple? How does the wind influence an architect’s design? Student architects explore these challenges and others as they uncover the engineering and physics behind tall towers and stupendous skyscrapers.

(2/3) Designing & Building Sailing Ships
Following in the footsteps of naval architects, novice designers examine different methods of assembling ships with keels, hulls, and masts. Students build and test their designs, evaluating their ship’s strengths and areas for improvement.

Brilliant Blunders
(PreK/K) Surprising Spills & Messes
Pour, stir, and spill! Students create their own crazy concoctions, observe the amazing (sometimes messy) results, and document their discoveries and conclusions. Aspiring scientists explore the properties of liquids and solids, as well as the benefits of unexpected and intriguing outcomes.

(K/1) Awesome Explosions and Collisions
Physicists learn about matter by deliberately crashing particles into each other. What else can be learned from collisions and explosions? Hands-on science experiments allow students to bump, crash, and jolt a wide variety of materials. Students learn how explosive phenomena such as impact craters, plate tectonics, and particle acceleration reveal a wealth of scientific knowledge about the world.

(1/2) Science Spin-Offs
Did you know that material made by NASA for tracking missiles was used to design invisible braces for teeth? Many technologies created for one purpose are transformed by scientists to help people in new ways. Students use their creativity and science skills to reimagine uses for a variety of technologies, and they work together to make their own science spin-offs.

“My son loves the content and the teachers. He walked away feeling very connected to the topic and program.”
— 2017 Leapfrog Parent
Technology Courses

Students with strong verbal/reading or math ability may enroll in a Technology course. Courses correspond with a child’s grade level as of January 1, 2018.

CTD Summer Program offers innovative technology courses at all grade levels, starting at PreK. Coding and robotics courses develop a foundation of computer science, engineering, computational thinking, and problem-solving skills. Students spend approximately one-third of each class session using tech devices such as tablets and laptops. The majority of students’ time is spent interacting with other students and engaging in hands-on interdisciplinary projects.

See course charts on page 7, and pages 14-16 for course availability per site and week.

See page 8 for the Coding Computations and Robots in Space course descriptions.

Mathematics Courses

Students with strong math ability may enroll in a Mathematics course. Courses correspond with a child’s grade level as of January 1, 2018.

Codes & Symbols

(PreK/K) Top Secret Numbers
How many different ways can a mathematician write or show the concept of “three”? A numeral is just one symbol that represents a certain quantity. Amazing secrets are revealed as students practice identifying and using symbol systems to create math problems, patterns, and codes.

(K/1) Extreme Code breaking
Breaking a code often involves identifying a pattern. Morse code, for example, is a pattern of dots and dashes. Students identify patterns of numbers, words, letters, and symbols and apply what they’ve learned to crack and create increasingly complex secret codes.

(1/2) Math for Spies
A good spy should be sneaky and an expert mathematician. In this course, aspiring spies use math to create secret codes, plot the coordinates of enemy hideouts and discover, through logical reasoning, the identities of other spies.

(2/3) Intro to Cryptography
Encryption protects our secret information. It’s a part of our everyday lives, even when we don’t see it. This course introduces cryptography and explores how to create and use strong passwords. Students will develop the high-level math and critical thinking skills to keep a step ahead of hackers.

Puzzles & Games

(PreK/K) Puzzle Party: Riddles, Mazes & More
Puzzles, tangrams, mazes, and riddles challenge students to seek solutions using computation, logic, and deduction.

(K/1) Games for Brains
A smart move in a game and solving a tough math problem -- both may call for strategy and math skills. This course develops students’ estimation and reasoning skills through complex games and challenging math problems.

(1/2) Mind bogglers: Predictions & Probability
Students’ analytical skills are challenged as they make educated predictions and consider probability—all in the context of word problems, chance games, and brain teasers.

(2/3) Brain Twisters: Multiplication & Fractions
Sometimes solving a math problem is like untangling a knot. You may need to try more than one approach to achieve success. In this class, students unravel multifaceted problems using fractions and multiplication to arrive at solutions.

Dollars & Cents: Business Basics

(PreK/K) Coins & Currency
Is the biggest coin always worth the most? Can you pay the same price at the store with bills and with coins? Through games, stories and dramatic play, students explore the value of our currency. They strengthen computation skills by counting and making change as they find out about spending money without a credit card!

(K/1) Bank On It
“A penny saved is a penny earned.”—Benjamin Franklin. Budding bankers explore the concept of a bank, including savings and interest. Students practice real-world skills as they create their own bank and set up different types of bank accounts, make deposits, and withdraw money.

(1/2) Business Start Up
What does it take to turn a profit? To answer that question, students create a kid business and set up a budget for their new enterprise. They will consider supply and demand and calculate their costs. As business owners, students will need to be creative problem-solvers, learning business vocabulary and concepts and applying computation skills to build a business budget.

(2/3) The Ins & Outs of the Stock Market
What is the stock market? Why do people invest money? Students explore these questions and more as they learn about stock shares, dividends, stockbrokers, stockholders, and stock exchanges. Students invest their computational and critical-thinking skills as ‘play the market.’
Leapfrog & Spark All-day Courses
Grades 1-4
(grade level on January 1, 2018)
Leapfrog and Spark offer weeklong, all-day enrichment courses that introduce a topic of interest and foster critical and creative thinking through interactive, project-based activities. Students in all-day courses take a single course that meets approximately six hours a day, allowing for focused study. Leapfrog and Spark all-day courses culminate with an Expo! of student work.

English & Language Arts
Students with strong verbal or reading ability may enroll in an English & Language Arts course. Courses correspond to a child's grade level as of January 1, 2018. See course charts for course availability per site and week.

(3/4) Pen to Podium: Expert Writing & Speaking
Would you express your ideas in the same way for both a movie review and a political discussion? A well-constructed essay doesn’t always translate into great oratory. Each must be carefully crafted to have the greatest impact. Students will explore rhetorical techniques for producing effective written pieces and delivering language for its appeal to the ear, heart, and mind.

Science
Students with strong math or verbal/reading ability may enroll in a Science course. Courses correspond to a child’s grade level as of January 1, 2018. See course charts for course availability per site and week.

(1/2) The Science of Treasure Hunting
Are you ready for a science-based treasure hunt? Students dig deep as they research the world of hidden treasure and treasure-hunting methods. Students study magnets, electricity, and electromagnetism as they learn how a metal detector works and solve challenges for building a better treasure-hunting tool. Students use a metal detector and other methods to find hidden treasures.

(1/2) Volcanoes & Earthquakes
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.

(2/3) Wilderness Challenge: Math & Science Outdoors
Basic needs like water, shelter, and food are opportunities for turning math and science concepts into practical know-how. Students evaluate, analyze, and estimate what is necessary for survival and are put to work building a structure, purifying water, and cooking food with basic supplies and what they can find outdoors. This hands-on course combines classroom time and outdoor learning. Please wear sturdy shoes and clothes that can get dirty.

(2/3) LEGO® Metropolis: Urban Design & Architecture
Imagine a whole city made out of LEGO® bricks! Introductory urban design and architecture concepts come to life when students collaborate to plan and create buildings, roads, and city infrastructures using LEGO® bricks specifically to allow for architecturally accurate construction. Course activities include producing blueprints and maps, learning principles of urban planning, and brainstorming solutions to design and engineering challenges.

(3/4) 3D Cell Biology
Cells are often described as “the building blocks of life.” 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, observe virtual cell reproduction, and discuss the laws of genetic inheritance.

(3/4) Design Engineering Chicago
Chicago was settled on marshy, mushy land. How did urban planners and engineers solve this problem for the city by the lake? Students learn how Chicago has engineered solutions throughout its history and consider how to engineer future solutions to today’s problems. Students use a wide variety of materials to create models of Chicago landmarks, such as buildings, tunnels, canals, bridges, and highways.

(3/4) Invention Convention: Ingenious Engineering
Learning about great inventors, their work, and what inspired their contributions is only the starting point in this course. Students find inspiration and then invent by brainstorming, designing, constructing, testing, and revising their own product.

NOTE: Additional $25 lab fee is required.

(3/4) How Things Work: Electronics
In this inquiry-based course, students learn the fundamentals of electronics by toggling between making basic devices and taking apart more sophisticated consumer electronics such as televisions, computers, and cell phones. Through research, experimentation, and discussion, students examine the development and use of electronic items, including how they might be improved in the future.

NOTE: Additional $25 lab fee is required.

Technology
Students with strong math or verbal/reading ability may enroll in a Technology course. No coding or robotics experience needed for all-day Leapfrog or Spark Technology courses. Courses correspond to a child’s grade level as of January 1, 2018. See course charts for course availability per site and week.

(2/3) Digital Game Design
Students become creators instead of just consumers of digital games when they design and create their own video game. They develop programming skills and design thinking as they use tools such as Gamestar Mechanic to design, test, and play their own digital games. They also beta test and provide feedback for the games of the other aspiring game designers in their class.

NOTE: Additional $25 lab fee is required.

(2/3) Robotics Challenges with LEGO® WeDo
Through a variety of robotics challenges, students use icon-based programming and LEGO® WeDo kits to manipulate the movements of their robot models. They’ll be ready for EV3 kits and other robotics systems after completing this course.

NOTE: Additional $25 lab fee is required.
(2/3) Tech Animation: Scratch & More
In this hands-on course, students learn fundamental computer animation using the Scratch programming language. Students gain skills in basic drawing tools, simple animation, graphic morphing, and graphic layering and create an animation program as a culminating project. After completing this course, students are prepared for more advanced animation and program design work.
NOTE: Additional $25 lab fee is required.

(2/3) My Robot Arm: Adaptive Technology with LEGO® WeDo
At the age of 14, Easton LaChappelle invented a prosthetic arm using LEGO®, fishing wire, and a 3D printer, significantly improving on existing technologies. In this course, students construct and program robotic arms using LEGO® WeDo kits and engage in open-ended projects inspired by the maker movement and young inventors. Students with previous WeDo experience will be challenged to develop their own projects.
NOTE: Additional $25 lab fee is required.

(3/4) Introduction to AI: EV3 Sensors & More
By building and programming LEGO® EV3 robots, students develop engineering and computer science knowledge. This course focuses on the EV3 sensors and the ways the robots respond to their environment. Hands-on experience with sensors leads to a discussion of artificial intelligence (AI) and the traits of “intelligent machines.” Students with previous EV3 experience are challenged to apply their existing engineering and coding skills to new ideas and projects.
NOTE: Additional $25 lab fee is required.

(3/4) Robotics Lab: Recording & Sharing EV3 Experiments
By building and programming robots using LEGO® EV3 robotics kits, students develop engineering and computer science knowledge and skills. Recording and documenting robotics projects with words and images develops introductory scientific research skills. This course is the whole package: hands-on experience with technology and preparation for scientific research and traditional lab experiments.
NOTE: Additional $25 lab fee is required.

(3/4) Girl Power Web Design
Assemble a web design tool kit in this girl-positive environment while planning and designing for the screen. Learn about the role of HTML and CSS and create webpages using fun and powerful software, which may include Photoshop, Flash, Adobe Dreamweaver, and Notepad++.
NOTE: Additional $25 lab fee is required.

(3/4) Web Design
Assemble a web design tool kit while planning and designing for the screen. Learn about the role of HTML and CSS and create webpages using fun and powerful software, which may include Photoshop, Flash, Adobe Dreamweaver, and Notepad++.
NOTE: Additional $25 lab fee is required.

Mathematics
Students with strong mathematical ability may enroll in a Mathematics course. Courses correspond to a child’s grade level as of January 1, 2018. See course charts for course availability per site and week.

(3/4) Survivor Math
Applying math skills is the key to survival in this creative problem-solving course. Students role-play a variety of exciting scenarios, such as being marooned on a desert island, trapped in a space station, cornered by an enemy army, or stranded in a deadly snowstorm. Geometry, algebraic thinking, probability, and measurement are just a few of the mathematical concepts used to save the day.
Weeks 2-4: Leapfrog & Spark
Half-day & All-day Course
Reference Chart

Select a course matching your child's grade level as of January 1, 2018. Select course topics that best fit your child's academic strengths as determined through test scores and other academic measures.

Week 2: July 9-13

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- **ELM**: Elmhurst
- **EV**: Evanston
- **LF**: Lake Forest
- **NP**: Naperville
- **PA**: Palatine

COURSE TYPE
- **A.M.**: 9 a.m. – 12 noon
- **P.M.**: 1 p.m. – 4 p.m.
- **All Day**: 9 a.m. – 4 p.m. (Elmhurst 8:30 a.m. – 3:00 p.m.)
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"Academic challenge was the best part of the class. It’s always great to see your child learn new things and to be challenged in a positive, friendly way. “

– 2017 parent

Week 4: July 23-27

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Solstice Program

Grades 4-6
(grade level on January 1, 2018)

Solstice is a two-week enrichment program for students in grades 4, 5, or 6 that provides deep exploration of a rich, interdisciplinary topic of study. Students in the Solstice program take a single course that meets approximately five-and-a-half hours a day, allowing for focus and depth. The Solstice program culminates with an Expo! of student work.

Solstice is offered at Northwestern University’s Evanston, Illinois campus, as both a residential and commuter option. Taking courses while residing on a college campus affords students ready for a residential experience the chance to be introduced to college in a safe and structured way. Solstice is also offered as a commuter-only program at Elmhurst College in Elmhurst, IL.

Apply early!
Application period begins January 3, 2018.

Northwestern University, Evanston, IL (residential or commuter)

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Elmhurst College, Elmhurst, IL (commuter only)

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Course Descriptions

English & Language Arts
ADMISION CRITERIA: EXPLORE® test OR PSAT 8/9 OR ≥ 90th national percentile rank in verbal or reading on standardized achievement test OR Admission Portfolio

NEW! Call to Adventure: Making a Hero
Heroes rise and fall, but their legends live on! Explore the hero’s journey through classic and modern narratives and craft an original hero. Students explore legends that have persisted through generations to answer the question, “What makes a story timeless?” Students compare, analyze, and dissect themes that run through stories from Greek mythology to J.R.R. Tolkien to the Star Wars Universe and DC Comics © heroine Wonder Woman, as they come to understand the connections between ancient and modern storytelling conventions.

NOTE: This course requires students to bring either a laptop computer or a tablet and keyboard for research and writing.

NEW! Balance of Power: Campaigning for Congress
What does it mean to be Republican or Democrat in 2018? Aspiring politicians will campaign for an open legislative seat with a policy platform and campaign strategy designed to attract as many voters as possible. Writing, research, and presentation skills come into play as students debate issues with other candidates in an attempt to claim a congressional majority, and shift the balance of power.

NOTE: This course requires students to bring either a laptop computer or a tablet with keyboard for research and writing.

Art, Social Sciences & Humanities
ADMISION CRITERIA: EXPLORE® test OR PSAT 8/9 OR ≥ 90th national percentile rank in verbal or reading on standardized achievement test OR Admission Portfolio

NEW! Novel Engineering
What does a Quidditch field look like? What would the shipwrecked Swiss Family Robinson need to keep in mind as they designed their new home? In this arts-integrated literature course, read fiction selections and imagine being an engineer who can impact the narrative by designing environments not yet realized to extend the stories. Projects involve creative writing, drawing, and constructing three-dimensional structures.

NEW! Debate & Discourse: Current Events
Learn the art of public speaking and debate as you sharpen your presentation skills, refine your arguments, and broaden your thinking. Research positions on current issues, and learn to present your ideas effectively by exploring different debate styles and analyzing professional debates.

NEW! Get Smart! Spies, Gadgets & Intelligence Organizations
Human societies have developed intelligence networks to protect domestic secrets against threats using cryptography, code breaking, and surveillance. If you are interested in the world of espionage, you will enjoy exploring the history, math, and science behind intelligence gathering, researching spies and famous missions, and developing your own plans, codes, and gadgets.

QUALIFYING SCORE: Math or Verbal/Reading

NEW! Colonizing the Cosmos
Imagine NASA wanted YOU to live on the first colony on Mars. Are you ready to launch? In this course, students will investigate the red planet, exploring the scientific and technological advancements NASA is developing to make travel to Mars a reality. By researching current real-world projects that are preparing humans for off-world colonization, such as “Mars Science City,” students will develop and propose their own plans for survival in space.

QUALIFYING SCORE: Verbal/Reading

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Brain Science
Discover the secrets of “the most complex thing in the universe”: your own brain, a three-pound mass of miles of nerve fibers that controls everything you do and how you react to the world. Learn how the brain impacts your decisions, controls how memory works, influences your mood, and more in this mind-blowing course!

NOTES:
• Additional $75 lab & materials fee required.
• This course may use classroom and laboratory space off campus.
QUALIFYING SCORE: Verbal/Reading

Breakout Biology: Infectious Disease
Infectious diseases have plagued humanity from the beginning of time. From the common cold to Ebola, they continue to roam our planet. Identify and manipulate variables, observe, measure and record data, and analyze and interpret results as you learn about the fields of microbiology, immunology, and epidemiology and investigate how the human immune system works to keep us healthy.

NOTES:
• Additional $75 lab & materials fee required.
• This course may use classroom and laboratory space off campus.
QUALIFYING SCORE: Verbal/Reading

Introduction to Genetics
What does it mean when someone says, “it’s in the genes?” Genes determine the color of our eyes and hair, our height, and our predisposition to certain illnesses. Learn how genes and DNA determine individual traits, discuss advances in the field (including the Human Genome Project), and consider the ethical, legal, and medical issues involved in genetic modification.

NOTES:
• Additional $75 lab & materials fee required.
• This course may use classroom and laboratory space off campus.
QUALIFYING SCORE: Verbal/Reading

The Science of Fiction
What goes into a successful Polyjuice potion? Is time travel possible? Could civilization exist underground? Through inquiry, discussion, and experimentation, explore the science behind the fictional worlds of Harry Potter, A Wrinkle in Time, When You Reach Me, Zita the Spacegirl, City of Ember, and more.

QUALIFYING SCORE: Verbal/Reading

UPDATED FAVORITE! Machine Physics
Put your engineering ingenuity to the test in this hands-on introduction to physics and engineering. Working collaboratively on building projects, explore physics concepts such as force, acceleration, potential and kinetic energy, and torque, and apply them to machines of your invention. This class is a great participatory experience for students interested in Science Olympiad events.

NOTE: Additional $75 lab & materials fee required.
QUALIFYING SCORE: Math

Roller Coaster Physics
How does an amusement park ride make you feel lighter than air one moment and press you down into your seat the next, all while keeping you safely inside the ride? Strap yourself in for a fast-paced adventure in physics and investigate topics such as the law of inertia, centripetal acceleration, and centrifugal force as you design and build a variety of amusement park thrills.

NOTE: Additional $75 lab & materials fee required.
QUALIFYING SCORE: Math

Technology, Computer Science & Engineering

ADMISSION CRITERIA: EXPLORE® test OR PSAT 8/9 OR ≥ 90th national percentile rank in verbal/reading, in quantitative or math on standardized achievement test OR Admission Portfolio

MIDI Mania: Computer Music & Composition
Drop the bass! Learn how musicians, producers, and D.J.s use technology and programming to create the music you hear every day. Create your own music, using a variety of electronic production suites and applying the basic principles of music theory. Whether an avid listener or an experienced performer, advance your skills with cutting-edge technology.

NOTES:
• Students are required to bring a laptop computer for use in the course.
• Additional $75 materials fee required.

Android Applications & Computer Programming
From Facebook to Angry Birds, mobile applications are used every day. Learn programming concepts and develop proficiency in drag-and-drop computer programming interfaces such as Scratch, Alice, and Snap, then extend your learning to build apps of your own.

NOTE: Students are encouraged to bring a personal Android device (such as a tablet or smart phone), but it is not required.

Minecraft
Join classmates in a secure Minecraft world for unique design challenges. Build societies and systems, plan treasure hunts, and use Minecraft to gain deeper knowledge of traditional academic content areas, including math (spatial reasoning, geometry), sociology (city planning, societal structures), and science (geology, circuitry). Previous experience with Minecraft is helpful, but not necessary.

NOTES:
• Students are required to bring a laptop computer for use in the course.
• Additional $75 materials fee required.

Mathematics

ADMISSION CRITERIA: EXPLORE® test OR PSAT 8/9 OR ≥ 90th national percentile rank in quantitative or math on standardized achievement test OR Admission Portfolio

Pre-Algebra Preview
This introduction to Pre-Algebra surveys topics such as properties of rational numbers, algebraic equations, ratio, proportion, percent, exponents and radicals, inequalities, the coordinate plane, areas and volumes, probability, and statistics. This course is intended for students who want a preview of Pre-Algebra for future study.

Real-World Math
Paper or plastic, financial markets, population growth...real-world issues big and small are understood and addressed through math! Learn to apply exponents, percentages, multi-step equations, and more to devise solutions for some of the most complicated issues facing the planet.

Math Madness!
Caution: the problems in this course will drive you wild! Armed with persistence, a passion for math, and problem-solving skills, you’re bound to triumph in this project-based course. Learn concepts ranging from pre-algebra to geometry and utilize a wide range of problem solving tactics while solving a wide variety of mind-bending math puzzles.

“The teachers, course content, and exposure to other students was rich beyond measure.”
– 2017 Solstice parent
Apogee Program

Grades 4-6
(grade level on January 1, 2018)

Apogee is a three-week intensive program for students in grades 4, 5, or 6. Apogee courses introduce students to advanced concepts in a particular subject area, helping them to gain new knowledge and develop creative, problem-solving, and study skills in a rigorous, supportive learning environment. Apogee students take a single course that meets five-and-a-half hours a day, allowing for focus and depth. A residential option is available. Taking courses while living on the campus of Northwestern University affords students ready for a residential program the opportunity to experience a college setting in a safe and structured way.

There are two different course types offered in Apogee:
- **Enrichment Intensive**: fast-paced, rigorous, non-credit courses designed to allow students to explore specialized subjects in depth.
- **Credit Intensive**: compacted high school honors courses designed to help students accelerate in a particular subject area. Credit Intensive courses include the compacted, full-year Algebra course and Introduction to Java Programming.


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<td>Making Modern Media</td>
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<td>Power &amp; Influence: Practice in Persuasion</td>
<td>Order in the Courtroom: The Law Through Fable &amp; Fairy Tale Trials</td>
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<td>War Games: Revolution</td>
<td>War Games: World War</td>
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<td>Business &amp; Design Workshop</td>
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<td>Algebra 1 Honors</td>
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Course Descriptions

English & Language Arts

ADMISSION CRITERIA: EXPLORE® test OR PSAT 8/9 OR ≥ 95th national percentile rank in verbal or reading on standardized achievement test OR Admission Portfolio

Creative Writing: Short Story
In this writing workshop, channel your creative ideas into polished short stories. Analyze professional writing techniques, practice writing and revising, and present your work to an audience. Combining elements of great storytelling and the short fiction form, create your own portfolio to take home.

NOTE: A laptop or tablet with keyboard is required for this course.

OFFERED: Session 1

Creative Writing: The Next Chapter
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 and practice the focus and diligence necessary to complete a novel.

NOTE: A laptop or tablet with keyboard is required for this course.

OFFERED: Session 2

UPDATED FAVORITE! Graphic Novels: Framing the Future
The graphic novel has become a popular storytelling format, and the genre of science fiction has taken flight along with it. In this course, students analyze and adapt works of science fiction into graphic novels, determining what elements of the story can be translated into a visual narrative. Students gain an understanding of the visual literacy techniques that speak volumes to readers as they independently write and illustrate graphic novels of their very own.

NOTE:
• A tablet with a keyboard and photo-taking capability, or laptop computer is required for this course.
• If a laptop is the student’s preferred technology, a smartphone with a built-in camera is required.
• Additional $75 materials fee required

OFFERED: Session 2

ABOUT THIS PARTNERSHIP: Since the troupe’s inception, The Neo-Futurists have grown to become one of the most highly regarded experimental theater companies in America. After writing and performing two-minute plays weekly since 1988, The Chicago Neo-Futurists have recently overtaken the milestone of 10,000 world premieres! Neo-Futurism is an evolving, multi-faceted theatrical aesthetic built on a belief in truthful, direct communication between the performer and the audience. The Neo-Futurists operate in New York, San Francisco, and Chicago.

UPATED FAVORITE! Making Modern Media
Unleash your creative instincts in Making Modern Media, where you’ll become a critical consumer and a content creator. Through research and writing projects, gain journalism skills to craft media on issues that matter. Learn the principles of photography and graphic design to create dynamic images that complement content, and practice shaping visual elements that make an impact on the audience. Collaborate with peers to propose and develop digital media for publication.

NOTES:
• A tablet with a keyboard and photo-taking capability, or laptop computer is required for this course.

OFFERED: Session 1

NEW! Short Play Generator with the Neo-Futurists
Every week since 1988, the Neo-Futurists ensemble generates between two and twelve stage ready-plays, performed in the order determined by a live audience. In this exciting course, you will become part of a performance ensemble, writing, directing and performing plays, at an accelerated pace. Explore the core Neo-Futurist tenets of honesty, brevity, chance and audience interaction through daily writing and performance workshops. Learn impactful staging techniques and experience the rehearsal process as you prepare short plays to be performed in a random order as determined by the audience!

NOTE: Lab Fee: $75

Arts, Social Sciences & Humanities

ADMISSION CRITERIA: EXPLORE® test OR PSAT 8/9 OR ≥ 95th national percentile rank in verbal or reading on standardized achievement test OR Admission Portfolio

Power & Influence: Practice in Persuasion
Are you tired of wearing a uniform to school every day? Do you need the latest tablet or smartwatch? Learn how to convince your parents or principal to see things from your perspective. Develop the skills needed to participate in debates while developing comfort with delivery as you perform essays and speeches. Learn to choose appropriate topics, form compelling introductions, and locate convincing evidence to support your claims.

OFFERED: Session 1
Order in the Courtroom: The Law through Fable & Fairy Tale Trials

Through the lenses of law, literature, and improvisation, explore the moral dilemmas at the core of traditional tales. Is Jack guilty of manslaughter? Does Rumpelstiltskin deserve a pile of gold for breach of contract? A mix of speaking and writing activities prepare you to take on the roles of lawyer, witness, juror, and storyteller. Develop advanced skills in oral argument, moral reasoning, mediation, conflict resolution, and the classic art of great storytelling.

OFFERED: Session 2

UPDATED FAVORITE! War Games: Revolution

In this simulation and game-based course, you won't just learn about history, you'll play it out. Examine key turning points that led citizens to revolt by taking on the perspective of important historical figures. Play out key decisions, consider the impact of potential strategies, and analyze primary and secondary sources to uncover personal and political motivations. Apply your knowledge through the design of a revolutionary board game.

OFFERED: Session 1

NEW! War Games: World War

In this sequel to our popular, original War Games course, take the opportunity to dive into turning points that led to world war by playing them out in a series of strategy games. Taking on the roles of important historical figures, you'll consider potential alliances, analyze strategies, and play out the results. By analyzing primary and secondary sources, students will discover how military decisions impact civilian life. Apply your learning to design and create the rules for a strategy game of your own.

OFFERED: Session 2

NEW! Ambassadors in Action

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, you will advocate for your country's positions, and sharpen your research, writing and speaking skills.

OFFERED: Session 1

UPDATED FAVORITE! Business & Design Workshop

Do you dream of presenting your invention to the Shark Tank panel? In this project-based course, work on collaborative teams to develop, test, revise, and market your problem-solving products. Through workshops and simulations, develop an understanding of product needs, market base, materials, design, and business presentation skills. Readings and discussions build knowledge of fundamental economics concepts and entrepreneurship terminology.

OFFERED: Session 2

Science

ADMISSION CRITERIA: EXPLORE® test OR PSAT 8/9 OR ≥ 95th national percentile rank (see course descriptions for qualifying subject area) on standardized achievement test OR Admission Portfolio

Zoology: From Classification to Dissection

From a bat the size of a raspberry to a bird-eating vampire frog, new animal species are discovered nearly every day. How do scientists classify these species? In this laboratory-based course, learn the basics of animal biology related to structure and physiology. Investigate evolutionary mechanisms that lead to the diversity of vertebrate and invertebrate animals. While conducting hands-on and virtual dissections, identify, compare, and contrast the features used to classify animals into major groups.

QUALIFYING SCORE: Reading/Verbal

Zoo Notes:
- Additional $125 lab & materials fee required.
- This course may use classroom and laboratory space off campus.

OFFERED: Session 1

Butterfly Effect: Entomology & Climate Change

For the first time, seven species of bees are on the endangered species list. In this course, discover connections between climate change and the changing behaviors and ecosystems of bugs. Investigate data on the indicators of climate change to develop an understanding of how humans impact the environment. Research and propose potential solutions that could change the world!

QUALIFYING SCORE: Reading/Verbal

NOTES:
- Additional $125 lab & materials fee required.
- This course may use classroom and laboratory space off campus.

OFFERED: Session 2

Detective Science: An Introduction to Forensics

“It is a capital mistake to theorize before one has data. Insensibly one begins to twist facts to suit theories, instead of theories to suit facts.” This was a guiding philosophy of Sherlock Holmes. Learn the forensic science involved in solving crimes, including how to collect fingerprints, crack secret codes, and examine evidence. Topics from life sciences, psychology, literary analysis, and physical sciences are combined to create, write and solve complex mysteries.

QUALIFYING SCORE: Reading/Verbal

NOTE: Additional $125 materials fee required.

OFFERED: Session 1

Chem Lab: It’s Elemental

You may know what happens when you combine baking soda and vinegar, but have you ever seen a gummy bear dance with potassium chlorate? Discover how chemistry explains—and impacts—the world around us and learn about core subjects including atomic weight and structure, acids and bases, stoichiometry, and chemical bonding. Working in a laboratory setting, learn to design experiments, evaluate results, and construct lab reports.

QUALIFYING SCORE: Math

NOTE: Additional $125 lab & materials fee required.

OFFERED: Session 2
Technology, Computer Science & Engineering

ADMISSION CRITERIA: EXPLORE® test OR PSAT 8/9 OR ≥ 95th national percentile rank in reading/verbal or in math on standardized achievement test OR Admission Portfolio

For Java Programming:
• EXPLORE® M ≥ 17 OR R ≥ 16 OR
• PSAT 8/9 M ≥ 450 OR R ≥ 24 OR
• SAT M ≥ 520 OR Crit. R ≥ 510 (taken before March 2016) OR SAT M ≥ 550 OR SAT R ≥ 28 (taken March 2016 or later) OR
• ACT M ≥ 22 OR ACT R ≥ 22 OR
• Admission Portfolio

Aerospace Engineering & The Science of Flight
How do the fundamental forces of flight (lift, drag, thrust, and weight) work to get a giant machine off the ground? Apply the principles of aerodynamics to your own designs, including kites, hot air balloons, gliders, and rockets. Learn about the history of flight, and through hands-on experiments, create hypotheses, observe your flying machines, and compose lab reports to understand the physics principles behind the science. Apply the six steps of the engineering process as you learn the role of an aeronautical engineer.

NOTE: Additional $125 materials fee required.
OFFERED: Session 2

Robotics: Some Assembly Required
Have you always wanted a robot to do your chores? Are you fascinated by smart technology? Learn the mechanical construction of sensors, motors, and gears, and control strategies to make robots perform tasks. Using LEGO® Mindstorms EV3, work in teams to design, build, and program robots that walk, talk, roll, and think. Discover the basic principles of engineering, hone your computer programming skills, and test your creativity.

NOTE: Additional $125 materials fee is required.
OFFERED: Session 1 & 2

Designing Machines That Work: Engineering & Physics
The Thrust SSC and the English Channel’s Chunnel have one thing in common: they are human-made wonders of the world. How did engineers create these marvels and what physics principles were utilized in designing them? In this STEAM course, learn the fundamentals of high school physics and investigate engineering concepts by applying advanced math, the conservation of energy, and Newton’s laws of gravity and motion. Using these tools, design, construct, and test your own projects, including towers, bridges, and CO2 dragster cars.

NOTE: Additional $125 materials fee required.
OFFERED: Session 1 & 2

Stop Motion Animation Studio
See the art of storytelling from a new angle: behind the camera! In this studio course, work with fellow filmmakers to apply the fundamentals of storytelling to develop your own original stop motion film. Discover how to use the principles of shooting and editing photos to create a moving story. Learn advanced computer programs (which may include Comic Life, Photoshop, iMovie, and GarageBand) to storyboard, create, and edit your final product.

NOTES:
• Additional $125 lab fee required.
• A laptop computer is required for this course.
OFFERED: Session 2

Python Programming
Python is a powerful programming language used to drive the Google search engine, YouTube, and applications at NASA. It has also been used to build many popular computer games. Python teaches the fundamentals of object-oriented programming, which can be applied to other languages like Java and C++. Learn to create Python scripts that use expressions, variables, conditionals, loops, lists, dictionaries, functions, and objects. Gain facility with the language through resources including video, and interactive learning environments that helps you build your own computer games.

NOTES:
• Students are required to bring a laptop computer for use in the course.
• Eligible for Sandra Dennhardt or Gary Greenberg Technology Scholarship; see the Summer Program website for more information.
OFFERED: Session 1 & 2

“My favorite parts of my academic experience have been the collaborative work. The instructors let our creativity shine.”
– 2017 Apogee student
Java Programming

PREREQUISITES: Pre-Algebra AND demonstrated experience in one programming language
In the Greenfoot programming environment, employ sophisticated data structures and coding strategies to create games and applications. Explore foundational programming concepts applicable to other coding languages and use the Net-Beans programming environment to develop and publish math-oriented applications. This class prepares you to take more advanced programming courses, including C++ Programming and AP® Computer Science A.

NOTES:
• A laptop computer (not a tablet) is required for this course.
• This course is cross-listed with Spectrum.
• Eligible for Sandra Dennhardt Technology Scholarship; see the Summer Program website for more information.

HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Sessions 1 & 2

Mathematics

ADMISSION CRITERIA: For Risky Business: Math Puzzles & Games and Geometry in Motion: EXPLORE® test OR PSAT 8/9 OR ≥ 95th national percentile rank in math on standardized achievement test OR Admission Portfolio

For Pre-Algebra Honors (Graded) and Algebra I Honors (Graded): EXPLORE® M ≥17 OR PSAT 8/9 M ≥450 OR ACT® M ≥22 OR SAT® M ≥520 (taken before March 2016) OR SAT® M ≥550 (taken March 2016 or later) OR Admission Portfolio with test scores at the 99th national percentile rank in quantitative or math section on a standardized achievement test

Risky Business: Math Puzzles & Games
Students in this course examine critical math topics through the lens of puzzles and games including chess, modern strategy, and games of chance. Explore concepts from algebra and geometry, and as well as probability and statistics. Apply the concepts of risk analysis, expected value, and outcomes to create your own game and predict the success of the players!

OFFERED: Session 1

NEW! Geometry in Motion
What do athletics and architecture have in common? Geometry! Students in this course will explore geometric concepts, including angles, patterns, similarity, congruence and curved shapes, and discover their connection to sports and design. Gain spatial sense as well as a solid understanding of geometric principles as you tackle real-world problems in this project-based mathematics course.

OFFERED: Session 2

Pre-Algebra Honors (Graded)
Pre-Algebra Honors covers a yearlong pre-algebra curriculum, including traditional topics such as properties of rational numbers, algebraic equations, geometric figures, ratio, proportion, percent, exponents and radicals, inequalities, the coordinate plane, areas and volumes, probability, and statistics. This course builds upon the essential skills of arithmetic as they apply to algebra and is designed for accelerated math students who are looking to take Algebra I in the fall. Students completing Pre-Algebra are prepared for Algebra I.

OFFERED: Session 1

Algebra I Honors

PREREQUISITE: Pre-Algebra
Algebra I Honors is an honors level high school mathematics course covering properties of real numbers; solving and graphing linear equations, functions, and linear inequalities; exponents and exponential functions; polynomials and factoring; quadratic equations and functions; radicals and geometry connections; and rational equations and functions. Algebra I Honors is intended for students who have already studied the introductory ideas of algebra and plan to accelerate in their district’s math sequence.

NOTE: This course is cross-listed with Spectrum.

HIGH SCHOOL CREDIT OFFERED: 2 semesters
OFFERED: Sessions 1 & 2
Spectrum Program

Grades 7 & 8*

(grade level on January 1, 2018)

*Students in grade 9 are eligible to apply and will be considered on a case-by-case basis.

Spectrum provides students a unique opportunity to study one subject at a pace equal to their abilities alongside peers who share similar interests and talents. Spectrum students take a single course that meets five-and-a-half hours a day for three weeks, allowing for focus and depth. Taking courses while living on the campus of Northwestern University affords students ready for a residential program the opportunity to experience college in a safe and structured way.

There are two different course types offered in Spectrum:

• **Enrichment Intensive**: fast-paced, rigorous, non-credit courses designed to allow students to explore specialized subjects in depth
• **Credit Intensive**: compacted high school honors courses designed to help students accelerate in a particular subject area


“Not only an intellectually stimulating program, but a staff that really cares about the students.”

– 2017 Spectrum student
Enrichment Intensive Courses

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Credit Intensive Honors Courses

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Spectrum Enrichment Intensive Course Descriptions

While not credit-bearing, Enrichment Intensive courses are rigorous, fast-paced, and cover high school level content. They are designed to engage students in a specialized, often interdisciplinary topic of interest and to allow in-depth study while applying critical and creative thinking skills.

ADMISSION CRITERIA FOR ENRICHMENT INTENSIVE COURSES

For Citizen Science; Imagining the Multiverse: Fanfiction Workshop; Forensic Science; and Taking Action: Leadership & Service:

- ≥ 95th national percentile rank in verbal or reading on grade-level standardized achievement test OR
- SAT® OR ACT® (taken above-grade-level in grade 7 or 8) OR
- EXPLORE® test OR PSAT™8/9 (taken above-grade-level in grade 5 or 6) OR
- Admission Portfolio

For Competition Math:

- ≥ 95th national percentile rank in math on grade-level standardized achievement test OR
- SAT® OR ACT® (taken above-grade-level in grade 7 or 8) OR
- EXPLORE® test OR PSAT™8/9 (taken above-grade-level in grade 5 or 6) OR
- Admission Portfolio

For FUSE Studio Design Challenges:

- ≥ 95th national percentile rank in verbal/reading or math on grade-level standardized achievement test OR
- SAT® OR ACT® (taken above-grade-level in grade 7 or 8) OR
- EXPLORE® test OR PSAT™8/9 (taken above-grade-level in grade 5 or 6) OR
- Admission Portfolio

UPDATED FAVORITE! Imagining the Multiverse: Fanfiction Workshop

Let your imagination run wild and hone your writing skills by taking the reins of established fictional universes. Learn how to expand upon your favorite stories by diving deep into character’s psyches, and combine separate worlds into something truly new. A piece ready for publication serves as the capstone project.

SUBJECT: English & Language Arts
OFFERED: Session 2
NEW! Citizen Science
Science doesn’t stop at the laboratory’s edge. Discover how researchers, science advocates, and everyday citizens turn research into practical application through political advocacy; participate in open-source research projects; and practice science writing outside the standard lab report format. Conversations with officials from Northwestern University and the City of Evanston will supplement this wide-ranging investigation of the most pressing scientific issues.

SUBJECT: Science
OFFERED: Session 1

Forensic Science
Despite what you see on TV, more than an hour of commercially interrupted hard science goes into cracking a case. Forensic Science examines the relationship between science and the criminal justice system through mini-lectures, in-class discussion, and hands-on activities where students collect, preserve, and analyze crime scene evidence. Labs may include trace analyses of hair, fiber, stain, epithelial cells, fingerprints, and DNA. This class is an excellent prelude to future science and laboratory coursework.

NOTE: Additional $125 lab fee required.

SUBJECT: Science
OFFERED: Session 2

FUSE Studio Design Challenges
Complete design challenges developed by Northwestern University and develop problem solving, creativity, and persistence skills. Projects to explore span diverse fields such as electronics, robotics, biotechnology, architecture, sound mixing, and fashion design. With the help of an expert facilitator, use STEAM-based practices to produce and present artifacts for peer review, remixing, and expert feedback.

NOTES:
• Additional $125 materials fee required.

SUBJECT: Technology, Computer Science & Engineering
OFFERED: Sessions 1 & 2

Competition Math
Do you participate in MATHCOUNTS® or have an interest in competition-based problem solving? Competition Math will introduce you to the concepts and techniques of applied math and solving competition math puzzles and prepare you for national math contests such as AMC, the Art of Problem Solving, and others. The course will tackle problems in the major areas of competition math—algebra, geometry, number theory, counting, and probability—and is ideal for students who enjoy math and solving challenging problems.

SUBJECT: Mathematics
OFFERED: Session 1

Taking Action: Leadership & Service
Each year, three million Americans experience homelessness, 15 million go hungry, and one in five children lives in poverty. Why? What can young people do about it? An offering of CTD’s Civic Education Project, Taking Action integrates academic study with meaningful community service. Divide time between the classroom and supervised hands-on service projects with community organizations such as homeless shelters, Head Start programs, or top political offices. Gain a deeper understanding of complex issues and learn how to make a difference. This course enhances communication, critical thinking, and problem-solving abilities and prepares students for a lifetime of leadership and civic engagement.

NOTE: Additional $125 field study fee required.

SUBJECT: Leadership & Service
OFFERED: Sessions 1 & 2

Credit Intensive Course Descriptions
Credit Intensive courses are rigorous, fast-paced courses taught at the honors level. Students earn grades and are expected to complete a single semester or full academic year’s worth of curriculum in three weeks.

English & Language Arts

Creative Writing Workshop
PREREQUISITE: Graded writing assignment
This course encourages developing writers to become more astute readers of literature and to understand how a writer employs aspects of craft to their creative advantage in genres such as fiction, poetry, and short story. Topics and inspiration are gathered from a variety of sources and activities such as writing prompts, open discussions, and field trips. Explore and apply the elements of effective writing through focused academic exercises, peer group response, literary analysis, and instruction in craft. Develop a number of creative pieces for a portfolio reflecting your growth as both a writer and thinker.

HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Sessions 1 & 2
Research Writing Workshop: Evil Genius

PREREQUISITE: Graded writing assignment
It’s not easy being the bad guy! Hone your research, analytical, and writing skills as you look for patterns in the criminal behavior of literature’s most famous villains. What motivates them, how do they convince others to join their side, what leads to their undoing, and how are they brought to justice? Students apply reading in philosophy, history, and criminology to assert their position on the nature of evil and create a brand-new villain informed by their research.

HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Session 1

Advanced Literary Analysis: Man vs. Machine

PREREQUISITE: Graded writing assignment
From the ancient Greeks on, authors have explored the ethical dilemmas of artificial intelligence. Through close readings, lively debates, and writing activities, examine what it means to be intelligent, to have a mind, and the implications of creating “intelligent” machines. Readings may include Greek myth; authors such as Mary Shelley, Isaac Asimov, Arthur C. Clarke, and Terry Pratchett; and scientific articles. This course is great preparation for high school, the critical reading and writing sections of the SAT, and the English and Reading sections of the ACT.

HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Session 2

UPDATED FAVORITE! Non-Fiction Writing Workshop

PREREQUISITE: Graded writing assignment
From ads to blogs to columns, we read an astonishing amount of non-fiction every day. Learn about audience, purpose, point of view, and more in this course that develops skills for producing informational texts of all types, using a range of models in a project-based learning environment. Students will focus on informative/explanatory, procedural/how-to, persuasive, nonfiction narrative, and biographical forms. This class is great preparation for advanced high school writing and AP® English courses.

HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Session 2

Arts, Social Sciences & Humanities

ADMISSION CRITERIA: EXPLORE® R ≥16 OR
• PSAT 8/9 R≥24 OR EBRW≥480 OR
• SAT Crit. R ≥510 (taken before March 2016)
  OR SAT R≥28 (taken March 2016 or later) OR
• ACT R ≥22 OR
• Admission Portfolio

Persuasion & Debate
This course focuses on the principles and practices of effective communication in a variety of speaking situations encountered in school and later in life as an adult. Students will examine pressing social issues and develop skills in critical thinking, public speaking, argumentation, and writing through lectures and discussions, reflective writing, persuasive essays, speeches, and structured debates. After completing the course, students are prepared for advanced study in honors English, humanities, and the social sciences, and are ready to participate in various forms of competitive debate.

HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Sessions 1 & 2

Human Rights & Foreign Policy
Since the conclusion of WWII, global relations have been dominated by US foreign policy, leaving the United States both admired and reviled by other nations. In this introduction to foreign policy issues, analyze means of international cooperation, such as economic globalization, international legal frameworks, environmental agreements, and diplomacy. Study issues of civil conflict, national security, and human rights in the context of contemporary global topics such as the challenges in the Middle East, emerging economies, and climate change. Readings and discussions are complemented by guest presentations, field trips, and structured writing experiences to hone critical-thinking and persuasive-writing abilities.

HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Session 1
“My son is suddenly grown up after the summer program. The experience nurtured his independence, and encouraged him to step out and grow.”

– 2017 Spectrum parent

NEW! Cold Open: Crafting Political Comedy

**PREREQUISITE:** Graded writing assignment

“It’s CTD Night Live!” Future Kate McKinnons and John Olivers will study the history of political satire from the Greeks to today, and examine the relationship between comedy and current events. In a writer’s room format, students will learn to synthesize individual perspectives and senses of humor into a single, coherent perspective. As a culminating project, the final week of the course will resemble the production process at Saturday Night Live: students will pitch, write, rehearse, and produce an original political comedy show focusing on the news of the week.

**HIGH SCHOOL CREDIT OFFERED:** 1 semester

**OFFERED:** Session 2

Brain & Behavior: Introduction to Psychology

Through study of the structures and functions of the brain and nervous system; the relationship between brain activity and action; and the role of biological, environmental, social, and individual factors in psychological experience, learn exactly why people do what they do. Examine key theories, experiments, and individuals in the field of psychology through dynamic lectures, group activities, debates, and hands-on projects to gain a better understanding of scientific research and psychological thought. This course is an excellent introduction to behavioral science or advanced-level psychology courses.

**HIGH SCHOOL CREDIT OFFERED:** 1 semester

**OFFERED:** Sessions 1 & 2

NEW! Student Teaching: Learning & the Brain with Northwestern’s Learning Sciences

Discover the science of teaching and learning! In partnership with the Learning Sciences program at Northwestern’s School of Education and Social Policy, study the complex brain functions that teachers take into consideration when planning lessons and working with students, and apply them to lessons of your own you will teach your peers. Field trips to Northwestern labs and research offices will supplement rigorous in-class discussion.

**HIGH SCHOOL CREDIT OFFERED:** 1 semester

**OFFERED:** Session 1

Bubbles & Crashes: Introduction to Economics

Can you spot a stock market bubble before it pops? How do decisions by governments, businesses, and individuals affect markets? Budding economists examine economic booms and busts of the past and present, focusing on concepts such as risk, supply and demand, marginal utility, and the fundamentals of investing. This course builds critical-thinking skills through discussion and writing experiences and is ideal for students interested in future study of economics, political science, international relations, or other advanced social sciences.

**HIGH SCHOOL CREDIT OFFERED:** 1 semester

**OFFERED:** Session 1

**UPDATED FAVORITE! Here’s the Pitch: Idea to IPO**

Nine out of ten start-ups will fail; in this course, learn how to make your idea the one that succeeds. With peer entrepreneurs, develop a professional plan for a small business start-up, research the various requirements and costs associated with opening a new business, meet and learn tips of the trade from local entrepreneurs, and gain invaluable experience with business planning and decision-making processes. The course concludes with a simulation of operations and reactions to variables, using techniques and tools to track and analyze business performance.

**HIGH SCHOOL CREDIT OFFERED:** 1 semester

**OFFERED:** Session 2

Science

**ADMISSION CRITERIA:** Varies by course; please note the requirements for each course below.

For Fundamental Physics Honors: Force & Motion; Physics First Honors; and Topics in Chemistry Honors:
- EXPLORE® R ≥16 + EXPLORE® M ≥17 OR
- PSAT 8/9 R≥24 + M≥450
- SAT Crit. R ≥ 510 + SAT M ≥ 520 (taken before March 2017) OR SAT R ≥ 28 + SAT M ≥ 550 (taken March 2017 or later) OR
- ACT R ≥22 + ACT M ≥22 OR ACT S ≥23 OR
- Admission Portfolio

For Introduction to Biomedicine and Biology Honors:
- EXPLORE® R ≥16 OR
- PSAT 8/9 R≥24
- SAT Crit. R ≥ 510 (taken before March 2017) OR SAT R ≥28 (taken March 2017 or later) OR
- ACT R ≥22 OR ACT S ≥23 OR
- Admission Portfolio

Fundamental Physics Honors

**PREREQUISITE:** Algebra I

Force is fundamental to physics on the small scale (subatomic particles), large scale (galaxies and stars), and everything in between. Explore a variety of fascinating phenomena in the physical world and the way physics explains the motion of objects, including electrons in an electrical circuit, roller coasters, planets, the light that we use to see, and the sounds we hear. Hands-on lab exercises complement the course material and allow for the derivation of important physics concepts. This course is excellent preparation for Physics Honors.

**NOTES:**
- A scientific or graphing calculator is required.
- Additional $125 lab fee required.

**HIGH SCHOOL CREDIT OFFERED:** 1 semester

**OFFERED:** Session 1

Physics First Honors

**PREREQUISITE:** Algebra I

Build a strong conceptual understanding of physical principles ranging from force and motion to classical mechanics. This course is a full-year physics curriculum course intended for students who attend schools with a Physics First science sequence and plan to accelerate through the high school science curriculum. Students who plan to take Physics at their academic year school are encouraged to take Fundamental Physics Honors. Physics First Honors prepares students for more advanced physics topics and AP® Physics.

**NOTES:**
- A scientific or graphing calculator is required.
- Additional $125 lab fee required.

**HIGH SCHOOL CREDIT OFFERED:** 2 semesters

**OFFERED:** Session 2
Topics in Chemistry Honors
PREREQUISITE: Algebra I
Through laboratory experiments, explore the chemistry found in everyday surroundings, including atomic theory, stoichiometry, chemical reactions, intermolecular forces, periodic trends, and acids and bases. Explore concepts, adjust variables independently, apply proper lab technique, and use your findings to determine next steps. This inquiry-based course provides a foundation for advanced studies in chemistry.

NOTES:
• A scientific or graphing calculator is required.
• Additional $125 lab fee required.

HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Session 1 & 2

Introduction to Biomedicine
Explore groundbreaking medical research, gain insights into the body's molecular and cellular processes, and learn how that knowledge is applied to medical practice and treatments. Get acquainted with topics in chemistry while investigating biomechanics, and explore biology at the cellular level. This course is an excellent introduction to the study of medicine or advanced laboratory courses.

NOTES:
• Additional $125 lab fee required.
• This course may use classroom and laboratory space off campus.

HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Sessions 1 & 2

Biology Honors
PREREQUISITE: Completion of a laboratory science course
Biology comes alive in this fast-paced high school honors course, emphasizing the principles that apply to plants and animals through class discussion, text readings, demonstrations, and applying methods of scientific investigation in the lab. Biology Honors is a full-year course in an accelerated format designed for students who intend to accelerate in science, and prepares students for Human Biology, Biology of Cancer, and AP® Biology; students who plan to take biology at their academic-year school are encouraged to enroll in Introduction to Biomedicine Honors or one of our Physics or Chemistry courses.

NOTES:
• Additional $125 lab fee required.
• This course may use classroom and laboratory space off campus.

HIGH SCHOOL CREDIT OFFERED: 2 semesters
OFFERED: Sessions 1 & 2

Technology, Computer Science & Engineering

ADMISSION CRITERIA: Varies by course; please note the requirements for each course below.

For Java Programming; HTML & CSS Programming; C++ Programming; and VEX® Robot Rivalries:
• EXPLORE® M ≥17 OR R ≥16 OR
• SAT 8/9 M ≥450 OR R ≥24 OR
• SAT M ≥520 OR SAT Crit. R ≥ 510 (taken before March 2016) OR SAT M ≥550 OR R ≥28 (taken March 2016 or later) OR
• ACT M ≥22 OR ACT R >28 OR
• Admission Portfolio

For Significant Figures: Data Science Honors:
• EXPLORE® M ≥17 OR
• PSAT 8/9 M ≥450 OR
• SAT M ≥520 (taken before March 2016) OR SAT M ≥550 (taken March 2016 or later) OR
• ACT M ≥22 OR
• Admission Portfolio

For Camera Ready Graphic Design:
• EXPLORE® R ≥16 OR
• PSAT 8/9 R ≥24 OR
• SAT Crit. R ≥510 (taken before March 2016) OR SAT R ≥28 (taken March 2016 or later) OR
• ACT R ≥22 OR
• Admission Portfolio

UPDATED FAVORITE! Significant Figures: Data Science Honors
PREREQUISITE: Algebra I
Big Data can illuminate everything from politics to sports, and provide predictions for both news analysts and citizens. Surveying theories of probability, learn how to turn data into algorithms for making better decisions. Individual research projects will find students collecting, analyzing, and applying data toward proposals for action.

NOTE: A laptop computer (not a tablet) is required for this course.

HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Session 1

Java Programming
PREREQUISITES: Pre-Algebra AND demonstrated experience in one programming language
In the Greenfoot programming environment, employ sophisticated data structures and coding strategies to create games and applications. Explore foundational programming concepts applicable to other coding languages and use the NetBeans programming environment to develop and publish math-oriented applications. This class prepares you to take more advanced programming courses, including C++ Programming and AP® Computer Science A.

NOTES:
• A laptop computer (not a tablet) is required for this course.
• This course is cross-listed with Apogee.
• Eligible for Sandra Dennhardt Technology Scholarship; see the Summer Program website for more information.

HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Sessions 1 & 2

HTML & CSS Programming
PREREQUISITE: Algebra I
HTML and CSS are the two dominant languages of the web, and a proficient understanding of HTML and CSS is key to building and maintaining websites. Study begins with the fundamentals of front-end web development, then moves into more advanced topics, including semantic front-end coding techniques and practices, CSS3 transitions, transforms and animations, building mobile responsive pages with CSS, media queries, and more.

NOTES:
• A laptop computer (not a tablet) is required for this course.
• Eligible for Sandra Dennhardt Technology Scholarship; see the Summer Program website for more information.

HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Session 1
C++ Programming
PREREQUISITE: Algebra I AND demonstrated experience in one programming language
Key concepts in C++ include problem solving, design strategies and methodologies, algorithms, inheritance, polymorphism, encapsulation, common data structures, and the class-object relationship. In addition to learning the language of C++ and writing code from scratch, engage in discussion of the ethical and social implications of programming, spanning from the hacker culture of the 1960s to today's open source movement.

NOTES:
• A laptop computer (not a tablet) is required for this course.
• Eligible for Sandra Dennhardt Technology Scholarship; see the Summer Program website for more information.

HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Session 2

UPDATED FAVORITE! VEX® Robot Rivalries
PREREQUISITE: Algebra I
Using VEX EDR®, a robotics system consisting of modular hardware, sensors, and programming software, collaborate to create custom machines that execute tasks in a battle of creativity, design, and execution. This course provides exposure to contemporary examples of robotics technology and pressing questions raised by their application. Used in the world-famous FIRST® Tech and Robotics challenges, VEX® robotics teaches students engineering, design, build, and collaborative skills crucial in emerging design and engineering careers.

NOTE: Additional $125 materials fee required.

HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Sessions 1 & 2

UPDATED FAVORITE! Camera Ready Graphic Design
Through a series of real-world exercises and hands-on studio sessions using Adobe Illustrator, Photoshop, and Adobe InDesign, build a foundation for print, online, and multi-platform visual communication, and explore the fundamental elements of visual communication from typography to branding. Complementing the technical portion of the course, daily sketchbook activities, readings on design history, contemporary design, and global brand awareness, field trips, films, and readings will illuminate the challenges faced by twenty-first-century designers.

NOTE: This course is cross-listed with Apogee.

HIGH SCHOOL CREDIT OFFERED: 2 semesters
OFFERED: Sessions 1 & 2

Algebra II & Trigonometry Honors
PREREQUISITE: Algebra I
Algebra II & Trigonometry Honors covers systems, equations, polynomial arithmetic, complex numbers, solutions of quadratic equations, exponential and logarithmic functions, sequences, series, graphs of polynomial functions, conic sections, and concepts in trigonometry. Algebra II & Trigonometry Honors is a full-year high school course intended for students who plan to accelerate in their district's math sequence.

HIGH SCHOOL CREDIT OFFERED: 2 semesters
OFFERED: Sessions 1 & 2

Mathematics

ADMISSION CRITERIA: EXPLORE® M ≥17 OR
• PSAT 8/9 M ≥450 OR
• SAT M ≥520 (taken before March 2016) OR SAT M ≥550 (taken March 2016 or later) OR
• ACT M ≥22 OR
• Admission Portfolio

NOTE: A graphing calculator is required for all mathematics courses.

Algebra I Honors
PREREQUISITE: Pre-Algebra
Algebra I Honors covers properties of real numbers; solving and graphing linear equations, functions, and linear inequalities; exponents and exponential functions; polynomials and factoring; quadratic equations and functions; radicals and geometry connections; and rational equations and functions. Algebra I Honors is a full-year course intended for students who have already studied the introductory ideas of algebra (Pre-Algebra) and plan to accelerate in their district’s math sequence.

HIGH SCHOOL CREDIT OFFERED: 2 semesters
OFFERED: Sessions 1 & 2

Geometry Honors
PREREQUISITE: Algebra I
Geometry Honors covers formal proofs, logic and deductive reasoning, constructions, congruence and similarity, parallels and perpendiculars, polygons and circles, transformations and problem solving using advanced technology. Geometry Honors is a full-year high school course intended for students who plan to accelerate in their district’s math sequence.

HIGH SCHOOL CREDIT OFFERED: 2 semesters
OFFERED: Sessions 1 & 2
Equinox Program

Grades 9–12
(grade level on January 1, 2018)

Equinox creates a rigorous, fast-paced learning community for academically advanced students in grades 9 through 12. Equinox courses provide students the opportunity to earn high school credit for advanced high school and college-level subjects through the Center for Talent Development. Students take a single course that meets five-and-a-half hours per day, five days per week. Most courses are three weeks in length, but there are also two five-week course options. Please see course charts and descriptions for sessions and course length.


Northwestern University, Evanston IL, (residential or commuter)

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Equinox Course Descriptions

English & Language Arts

ADMISSION CRITERIA: Above-grade-level Tests: (taken in or before the 9th grade year): SAT Crit. R ≥510 (taken before March 2016) OR SAT R ≥28 OR ACT R ≥22
• On-level Tests: (taken in the 10th or 11th grade year): SAT Crit. R ≥700 (taken before March 2016) OR SAT Evidence-Based Reading & Writing ≥700 (taken March 2016 or later) OR ACT R ≥32
• If test scores are not available, or do not meet the criteria, students are welcome to apply via Admission Portfolio.

Creative Writing Seminar
PREREQUISITE: Graded writing sample, preferably creative writing
Refine critical reading and creative writing skills through discussion of contemporary literature and extensive writing output, focusing on revision. Develop skill with sentence and narrative structure, imagery, cadence, voice, and dialogue across genres, including poetry, fiction, and creative nonfiction. Receive feedback in a workshop format, producing a final portfolio of original work.

HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Session 1

UPDATED FAVORITE! Creative Writing Master Class
PREREQUISITES: Graded creative writing sample AND one year of high school honors English (previous writing workshop experience preferred)
Designed for students with considerable experience in creative writing, this course pairs adventurous reading with prodigious writing across genres, including poetry, fiction, and creative nonfiction. Advance skills in imagery, voice, setting, character, and narrative. Practice daily reading and writing, peer review and revision, and focus output in a preferred genre. Develop a portfolio of serious original work ready for publication.

HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Session 2

College Composition & Rhetoric
PREREQUISITES: Graded writing assignment AND one year of high school honors English
In this intensive, process-driven course, learn to write persuasively for a range of audiences. Analyze interdisciplinary readings and synthesize information to deliver compelling arguments. Workshop original pieces for revision and submit a portfolio worthy of any college classroom.

HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Session 1

Screenwriting Seminar
PREREQUISITE: Graded writing sample, preferably creative writing
Calling gamers, thespians, UX designers, and film directors: refine your scene craft in this writer’s room-inspired workshop. Analyze seminal films and binge-worthy episodes to identify and practice narrative structure, character, dialogue, format, voice, scope, pace, and setting. Critique and practice screenplay adaptation. Workshop original scenes and write a short screenplay.

HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Session 2

Arts, Social Sciences & Humanities

ADMISSION CRITERIA:
• Above-grade-level Tests: (taken in or before the 9th grade year): SAT Crit. R ≥510 (taken before March 2016) OR SAT R ≥28 OR ACT R ≥22
• On-level Tests: (taken in the 10th or 11th grade year): SAT Crit. R ≥700 (taken before March 2016) OR SAT Evidence-Based Reading & Writing ≥700 (taken March 2016 or later) OR ACT R ≥32
• If test scores are not available, or do not meet the criteria, students are welcome to apply via Admission Portfolio.

AP® Psychology
PREREQUISITE: Graded writing assignment
Understanding the relationship between the brain and behavior is crucial to medicine, marketing, education, economics, and entertainment. AP® Psychology surveys the biological basis of behavior, sensation and perception, cognition, personality, social psychology, and abnormal psychology. Students review case studies, analyze experiment design, and prepare for the AP® exam.

HIGH SCHOOL CREDIT OFFERED: 2 semesters
OFFERED: Session 1

“I fit in with people who cared about their academic experience as much as I did. This was a new feeling ... it was an amazing experience that definitely changed me.”

– 2017 Equinox student
“We were encouraged to collaborate and problem-solve...We weren’t just meant to absorb information and memorize it for tests; we were using information to make projects.”

– 2017 Equinox student
Imaging the Universe
PREREQUISITES: Physics Honors (or Physics First curriculum/one semester Introduction to Physics) and Algebra I & II
Learn the principles of observational astronomy with an emphasis on analyzing astronomical data. Plan, collect, and analyze your own data using a computer-controlled telescope and CCD camera. Measure the height of lunar features, explore the surface of Mars, determine the mass of Jupiter. Study solar rotation, solar flares, and sunspots; measure variable stars and the properties of star clusters. With an emphasis on independent scientific research, data analysis, and scientific writing, this course gives nascent astronomers a taste of what real astronomical research is all about.
NOTES:
• A graphing calculator is required.
• A laptop computer (rather than a tablet) is required for this course.
HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Session 2

Chemistry Honors
PREREQUISITES: Algebra I AND Biology Honors OR Physics Honors
How does an atom account for the nature of matter? In this course, study the modern principles of chemistry, including atomic models, valence and ionization, bonding, nomenclature of formulas, moles, stoichiometry, gas laws, molecular forces, polarity, solutions, equilibrium, acids and bases, thermochemistry, and oxidation-reduction. Through experiments, learn to use proper lab technique, record and analyze data and produce scientific lab reports. Chemistry Honors is a full-year course in an accelerated format.
NOTES:
• A graphing calculator is required.
• Additional $150 lab fee required.
HIGH SCHOOL CREDIT OFFERED: 2 semesters
OFFERED: Sessions 1 & 2

AP® Chemistry
PREREQUISITE: Chemistry Honors AND Algebra I & II
This course focuses on thermodynamics, thermochemistry, the physical behavior of gases, states and structure of matter, chemical equilibrium and kinetics, and various types of chemical reactions. Daily laboratory work emphasizes competency in solving chemical calculations and problems. In the accelerated format, this rigorous and lab-heavy course requires significant study and dedication. Upon successful completion, students are prepared to take the AP® Chemistry exam.
NOTES:
• A graphing calculator is required.
• Additional $150 lab fee required.
• This course runs for five weeks, July 1 – August 3, 2018. Attendance for all five weeks is required.
HIGH SCHOOL CREDIT OFFERED: 2 semesters

Human Biology: Anatomy & Physiology
PREREQUISITE: Biology Honors
Examine the chemistry of cellular life, cell structure and function, human organization, major systems of the human body, human and medical genetics, DNA and biotechnology, human evolution, ecology, and population concerns. To develop lab skills required for advanced study in biology, perform dissections, as well as experiments in molecular genetics, histology, and the chemical composition of cells. This course helps prepare students for AP® Biology.
NOTES:
• Additional $150 lab fee required.
• This course may use classroom and laboratory space off campus.
HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Session 1

The Biology of Cancer
PREREQUISITE: Biology Honors
Explore what the National Cancer Institute calls the first question in understanding the biology of cancer: what is normal cellular behavior? Guided by Hanahan and Weinberg’s “Hallmarks of Cancer” framework, investigate genetic and epigenetic expression on cellular outcomes, including sustained proliferative signaling, replicative immortality, and activation of metastasis. Review available and potential therapies and clinical interventions with a focus on precision medicine, including the use of bioinformatics. Lecture and discussion are supported by labs.
NOTES:
• Additional $150 lab fee required.
• This course may use classroom and laboratory space off campus.
HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Session 2
**Technology, Computer Science & Engineering**

**ADMISSION CRITERIA:** Vary by course; please note the requirements for each course below.

**AP® Computer Science A and iOS Bootcamp with MobileMakersEd**
- Above-grade-level Test (taken in or before the 9th grade year): SAT R ≥510 + SAT M ≥520 (taken before March 2016) OR SAT R ≥28 + SAT M ≥550 (taken March 2016 or later) OR ACT R ≥22 + ACT M ≥22 OR ACT R ≥22 + ACT M ≥30 OR ACT R ≥32
- On-level Test (taken in the 10th or 11th grade year): SAT M ≥710 OR SAT Crit. R ≥700 (taken before March 2016) OR SAT M ≥740 OR SAT Evidence-Based Reading & Writing ≥700 (taken March 2016 or later) OR ACT M ≥30 OR ACT R ≥32
- If test scores are not available, or do not meet the criteria, students are welcome to apply via Admission Portfolio.

**SustainableXDesign: Design Challenge 2018 with the Chicago Architecture Foundation**
- Above-grade-level Test (taken in or before the 9th grade year): SAT R ≥510 + SAT M ≥520 (taken before March 2016) OR SAT R ≥28 + SAT M ≥550 (taken March 2016 or later) OR ACT R ≥22 + ACT M ≥22 OR ACT R ≥32 + ACT M ≥30 OR ACT R ≥30
- On-level Test (taken in the 10th or 11th grade year): SAT Crit. R ≥700 + SAT M ≥710 (taken before March 2016) OR SAT Evidence-Based Reading & Writing ≥700 + SAT M ≥740 (taken March 2016 or later) OR ACT R ≥32 + ACT M ≥30 OR ACT R ≥30
- If test scores are not available, or do not meet the criteria, students are welcome to apply via Admission Portfolio.

**iOS Bootcamp & Swift Development with MobileMakersEd**
- Additional $250 technology fee required.
- All students are required to bring their own Mac laptop computer (not a tablet) for this course. An iOS mobile device is also recommended (such as an iPod Touch, iPhone, or iPad).
- Eligible for Sandra Dennhardt Technology Scholarship.
- Different from previous years, class meets on Northwestern’s campus in Evanston in 2018.

**HIGH SCHOOL CREDIT OFFERED:** 1 semester

**OFFERED:** Session 1

**ABOUT THIS PARTNERSHIP:** MobileMakersEd offers iOS app development coursework, training, and support to schools across the nation. Equinox students become app developers with the support of MobileMakers’ expert instructors and an accelerated version of their bootcamp curriculum.

**AP® Computer Science A**
- Eligible for Sandra Dennhardt Technology Scholarship; see the Summer Program website for more information.

**HIGH SCHOOL CREDIT OFFERED:** 2 semesters

**OFFERED:** Sessions 1 & 2

**SustainableXDesign: Design Challenge 2018 with the Chicago Architecture Foundation**
- Additional $250 technology fee required.
- All students are required to bring their own Mac laptop computer (not a tablet) for this course. An iOS mobile device is also recommended (such as an iPod Touch, iPhone, or iPad).
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- Different from previous years, class meets on Northwestern’s campus in Evanston in 2018.

**HIGH SCHOOL CREDIT OFFERED:** 1 semester

**OFFERED:** Session 1

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**AP® Computer Science A**
- Eligible for Sandra Dennhardt Technology Scholarship; see the Summer Program website for more information.

**HIGH SCHOOL CREDIT OFFERED:** 2 semesters

**OFFERED:** Sessions 1 & 2

**SustainableXDesign: Design Challenge 2018 with the Chicago Architecture Foundation**
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**AP® Computer Science A**
- Eligible for Sandra Dennhardt Technology Scholarship; see the Summer Program website for more information.
mapping, and research. Use SketchUp, CAD, and Autodesk Revit BIM to develop fluency with software for building, structural design, MEP engineering, and construction. Create an original design and prototype and receive critique in the final showcase from renowned architects and designers.

NOTES:
• A laptop computer (not a tablet) is required for this course.
• Residential students will live on campus and may travel via public transit to class downtown.

HIGH SCHOOL CREDIT OFFERED: 1 semester
OFFERED: Session 2

ABOUT THIS PARTNERSHIP: The Chicago Architecture Foundation is a leading organization devoted to celebrating and promoting Chicago as a center of architecture innovation. As Chicago’s forum for the exchange of ideas on urban design, CAF inspires people to participate in the building of vibrant, sustainable communities and to demand the highest standard in urban design. CAF awakens young people to achieve their potential through the discovery of architecture, engineering and design.

NEW! Venture Innovation Lab with LaunchX
Join teen entrepreneurs from around the world to launch your own company in five weeks. Cultivate the business, technical, and interpersonal skills needed to design and test an original product. Learn from failure and build confidence and resiliency as you engage with proven entrepreneurial frameworks such as Disciplined Entrepreneurship, Lean Startup methodology, and Design Thinking strategies. Work collaboratively with a team of co-founders to overcome the challenges of starting a company. Students benefit from Launch X’s tested curriculum, experienced instructors, and state-of-the-art spaces on the Evanston campus of Northwestern University.

NOTES:
• This course is for enrichment, and will not confer credit.
• To apply for this course, please visit: https://launchx.com/summer-program/northwestern.php
• This course lasts five weeks, July 1 – August 3. All five weeks of the program are required for successful completion.

OFFERED: Session 1

ABOUT THIS PARTNERSHIP: The mission of LaunchX is to empower young people to build the future. Founded in 2012 by Laurie Stach, LaunchX gives high school students the skills and mindset to start real companies, putting tools, resources, and confidence in the hands of students with a passion for entrepreneurship.

Online Accelerated Summer Option
Each summer, CTD offers a selection of challenging online courses in a highly accelerated format. Students looking for a focused challenge can earn one or two high school credits in nine weeks.

Featuring small class sizes, an intuitive online learning environment, and a community of bright and motivated peers, Accelerated Summer Option (ASO) courses provide a unique opportunity for advanced students to:

• Experience concentrated exploration of a high interest topic
• Prepare for an accelerated placement in school
• Create scheduling flexibility during the regular school year by satisfying requirements over the summer

Specialized Accelerated Summer Option versions of popular CTD Honors, Honors Elective, and AP® courses for grades 6 through 12 open for enrollment in February and begin June 15.

Visit ctd.northwestern.edu/online for details.
Mathematics

**ADMISSION CRITERIA:**
Above-grade-level Test (taken in or before the 9th grade year):
SAT M ≥ 520 (taken before March 2016) OR SAT M ≥ 550 (taken March 2016 or later) OR ACT M ≥ 22

• On-level Test (taken in the 10th or 11th grade year):
  SAT M ≥ 710 (taken before March 2016) OR SAT M ≥ 740 (taken March 2016 or later) OR ACT M ≥ 30

• If test scores are not available, or do not meet the criteria, students are welcome to apply via Admission Portfolio.

**NOTE:**
For the following math courses, a graphing calculator is required in addition to a laptop computer or tablet.

**Data Science: An Introduction to Statistics**

**PREREQUISITE:** Algebra I

Learn how Nate Silver uses big data to analyze politics and sports; create predictions and model complex situations leveraging huge quantities of data. Discover how probability theory informs statistical methods; write computer code to perform simulations and statistical tests. Engage in original, independent research in which you identify, collect, and interpret big data.

**NOTE:** A laptop computer (not a tablet) is required for this course.

**HIGH SCHOOL CREDIT OFFERED:** 1 semester

**OFFERED:** Session 1

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**AP® Statistics**

**PREREQUISITES:**
Algebra I & II

Collecting, analyzing, and drawing conclusions from data are skills required in virtually every discipline. Explore theories of probability, descriptions of statistical measurements, probability distributions, and experimental and statistical inference. Develop research proposals, collect and analyze data, and complete a comprehensive statistical project. AP® Statistics is a full-year course taught in an accelerated format designed to prepare students for the AP® Statistics exam. It lays the foundation for advanced studies in data analytics, engineering, and the actuarial sciences.

**HIGH SCHOOL CREDIT OFFERED:** 2 semesters

**OFFERED:** Sessions 1 & 2

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**Pre-Calculus Honors**

**PREREQUISITES:**
Geometry AND Algebra I & II with Trigonometry

Pre-Calculus Honors builds upon advanced algebra. Topics include linear, quadratic, polynomial, exponential, logarithmic, and trigonometric functions. Students apply vectors, sequences, series, and matrices to solve problems. Advanced topics include functions and graphs, trigonometry, and discrete mathematics. Pre-Calculus Honors is a full-year high school course in an accelerated format and prepares students for taking AP® Calculus AB.

**HIGH SCHOOL CREDIT OFFERED:** 2 semesters

**OFFERED:** Sessions 1 & 2

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**Algebra II & Trigonometry Honors**

**PREREQUISITE:**
Algebra I

Algebra II & Trigonometry Honors covers systems, equations, polynomial arithmetic, complex numbers, solutions of quadratic equations, exponential and logarithmic functions, sequences, series, graphs of polynomial functions, conic sections, and concepts in trigonometry, including trigonometric identities. Algebra II & Trigonometry Honors is a full-year course in an accelerated format.

**HIGH SCHOOL CREDIT OFFERED:** 2 semesters

**OFFERED:** Sessions 1 & 2

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**AP® Calculus AB**

**PREREQUISITES:**
Geometry AND Algebra I & II with Trigonometry AND Pre-Calculus

Rocket scientist or brain surgeon, architect or engineer, the study of calculus is foundational. This college-level course covers analytic geometry, functions, limits, continuity, derivatives, integrals, and their applications. It explores symbolic differentiation and integration utilities as students apply these skills to solve problems. AP® Calculus AB is a full-year high school course in an accelerated format and prepares students to take the AP® Calculus AB exam.

**HIGH SCHOOL CREDIT OFFERED:** 2 semesters

**OFFERED:** Sessions 1 & 2

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**AP® Statistics**

**PREREQUISITES:** Algebra I & II

Collecting, analyzing, and drawing conclusions from data are skills required in virtually every discipline. Explore theories of probability, descriptions of statistical measurements, probability distributions, and experimental and statistical inference. Develop research proposals, collect and analyze data, and complete a comprehensive statistical project. AP® Statistics is a full-year course taught in an accelerated format designed to prepare students for the AP® Statistics exam. It lays the foundation for advanced studies in data analytics, engineering, and the actuarial sciences.

**HIGH SCHOOL CREDIT OFFERED:** 2 semesters

**OFFERED:** Sessions 1 & 2
Civic Leadership Institute
Northwestern University
Evanston, IL
July 8 – July 27, 2018

Service, Leadership & Community Transformation

The Civic Leadership Institute is a powerful capstone experience that prepares you to be a leader in your high school, college, and career. Young people often believe that they can’t make a difference. That they don’t have the knowledge, skills, or capacity to influence issues like poverty, healthcare, education, or the environment. That they’re powerless to create change. Yet there are countless stories that prove this is not the case.

Come explore the complex challenges that affect our communities, and develop the knowledge, experience, and leadership skills you need to make a positive impact on the world!

ADMISSION CRITERIA: Above-grade-level SAT or ACT test; OR ≥90th percentile rank in verbal or reading on standardized achievement test OR an Admission Portfolio.

Experience Northwestern & Chicago

On Northwestern University’s Evanston Campus, CLI participants experience college life at a world-class institution. The campus is a beautiful 240 acres on the shore of Lake Michigan, with views of the Chicago skyline, and access to shops and restaurants in one of America’s top college towns.

Academic and residential activities offer an unparalleled opportunity to explore Chicago. Several times a week, class groups engage in meaningful, hands-on service experiences in vibrant neighborhoods throughout the city, like Bronzeville, Chinatown, and Pilsen. On the weekends, students explore the city’s top museums and cultural sites. This one of-a-kind campus experience combines the best of a college town and a global city.

NOTES:
• Earn service hours
• Residential students only

Change the world. Start here.
• Serve communities
• Develop leadership skills
• Learn about social issues
• Make a difference

Additional Service & Leadership Opportunities for Summer 2018:

For students in grades 7-8:
Taking Action: Leadership & Service
See detailed course description on page 27.

CivicWeek: Urban Poverty & Community Change
June 24 – 30, 2018 – Chicago, IL

For students in grades 9-12:
CivicWeek: Immigration & Global Affairs
June 24 – 30, 2018 – Chicago, IL

For information about CLI or other CEP programs, contact:
cep@northwestern.edu
847/467-2572
www.cep.northwestern.edu

For questions regarding program admissions, contact:
ctd-admissions@northwestern.edu
847/467-1575

“CLI strengthened my belief that everyone can be a leader.”
—2017 Civic Leadership Institute student
Application Process

The online application is available at my.ctd.northwestern.edu. Complete applications (including all supporting documents) are reviewed as they are received starting January 3, 2018. Courses are filled on a first-come, first-served basis.

The application period will close on June 11, 2018, which is also the withdrawal deadline for full fee refunds (less a $60 processing fee). Although CTD tries to accommodate late applications, enrollment may not be possible.

Please be sure to complete the application online, including all supporting materials, as applications are reviewed only after all supporting documents and information has been received. Incomplete applications are not reviewed nor do they “hold a spot” in the desired course, regardless of whether or not payment is included.

Once a completed application is received, it is forwarded to the Admissions Office for review. Once an enrollment decision is made, the Admission staff will notify the applicant via e-mail using the primary e-mail address provided in the application. Application decisions will also be posted in students’ MyCTD account. The process takes approximately four weeks from the time a completed application is received. Due to the volume of applications, the review process may take longer in April, May, and June.

Program Tuition & Fees

Tuition rates vary by program, program length, course requirements, and application date. Basic tuition information regarding the application rate through May 14, 2018 is provided below. Detailed information about tuition, payments, and refund and withdrawal policies is on the CTD website at www.ctd.northwestern.edu/tuition-fees.

Leapfrog & Spark
Tuition ranges from $345 for a half-day, five-day Leapfrog program to $670 for an all-day, weeklong Leapfrog or Spark program. Challenge Lab tuition is $65 for a single, three-hour session.

Solstice
Tuition ranges from $1,575 (commuter, per two-week session) to $2,700 (residential, per session).

Apogee
Tuition ranges from $2,185 (commuter, per three-week session) to $3,795 (residential, per session).

Spectrum, Equinox & Civic Leadership Institute
Tuition ranges from $2,185 (commuter, per 3-week session) to $3,795 (residential, per 3-week session) to $6,795 (residential, per 5-week session).

PLEASE NOTE:
- Some courses require specialized equipment and/or a lab or materials fee. See individual course descriptions for details.
- Residential fees cover tuition, room and board, books, basic materials and activities, and health center fees.
- Commuter fees include tuition, books, basic course materials, lunch (for Solstice, Apogee, Spectrum & Equinox commuters only), and activities (optional, weekdays after class). (Please note: activities are not included in the tuition at the Elmhurst, commuter-only site as they are not offered.)
- Spectrum and Equinox students are required to bring a laptop computer or tablet for use in class, because many instructors make use of technology for teaching.
- Some specialized courses (Solstice through Equinox) require a laptop computer; please see course descriptions for details. All laptops and tablets must have word-processing capability and be WiFi enabled.

Financial Aid & Scholarship Opportunities

Need-based financial aid is available for Summer Program courses. Early application is encouraged for families requesting financial aid, as funds are limited and granted on a rolling basis. The financial aid application deadline is April 16, 2018.

A $60 deposit is required to complete the online application. The deposit will be refunded if the student is not admitted or if the aid award offered is not sufficient to meet the family’s financial need.

A five-month payment plan is available. To apply, please follow the directions on our website.

Specialized scholarship opportunities may also be available to students who meet specific criteria. Visit www.ctd.northwestern.edu/scholarship-opportunities for details.

Contacting the Summer Program & Future Communication from CTD

Phone: 847/467-1575
E-mail: ctd-admissions@northwestern.edu
Fax: 847/467-4283

Program participants will receive notifications of other programs and services provided by CTD. We hope you enjoy hearing about other opportunities. If you do not wish to receive e-mail messages promoting programs or services from CTD, contact us at ctd@northwestern.edu to request that your name be removed from our e-mail lists.
CTD Family Opportunities

Online Family Programs
These nine-week, flexible online modules engage bright young learners, kindergarten through grade 3, and their parents in exciting STEM and English/Language Arts classes. These online classes provide parents with playful, engaging curriculum and experienced teacher interactions to help them develop their child’s critical learning skills and instill a love of learning.

Visit our online calendar for important dates for our enrichment, service-learning, and online programs offered throughout the year.

Assessment through CTD
Through Northwestern University’s Midwest Academic Talent Search (NUMATS), you can identify exceptional academic ability and measure academic growth, while connecting students to tailored programs and opportunities. NUMATS enrolls year-round. More information on NUMATS assessment can be found at www.ctd.northwestern.edu/numats.

Stay Connected with CTD!

Free Parent Seminars
Throughout the year, CTD provides parents with the opportunity to hear from experts in the field of gifted education and child development. These free, 90-minute seminars are open to the public. Seminars are added to the CTD website as they are scheduled. Past topics include effective advocacy, developing executive functioning skills, and social-emotional needs of gifted children.

CTD Online Community
CTD’s Backpack for Parents is a robust online community for parents of academically advanced and gifted students who want to learn more about the talent development process and support their children’s interests and growth. CTD Backpack for Students is an active, online community for students who want to explore subjects they are passionate about with peers who share their interests and abilities. Community activities and social interactions are facilitated by a CTD staff member, but driven by student interests.

Special Event for Families: Opportunities for the Future Family Conference
CTD hosts a family conference just prior to the start of the Summer Program. It offers parents the chance to learn from experts in gifted education about talent development, social and emotional issues, and educational options. Students in grades 4 through 12 attend workshops on their favorite subjects and explore career paths.

Date, Time & Location: Saturday, June 30, from 1 p.m. to 5 p.m. on Northwestern University’s Evanston campus.

All details, including speakers, workshop sessions, and fees will be posted on the CTD website in January: www.ctd.northwestern.edu

National Association For Gifted Children
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Center for Talent Development
2018 Summer Program
For academically talented students age 4–grade 12

center for Talent Development
Summer Program
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