Fall 2020 Weekend at Home Online Course Catalog

Grade 3 - Grade 8

Weekend at Home at Center for Talent Development (CTD) offers live, online classes that focus on high interest topics, and include collaborative group work and individual hands-on projects over the course of a 6-week session. These challenging and enriching courses take place in an interactive, online classroom environment, and involve independent and small and large group activities. Our courses in English & Language arts, mathematics, science, design & engineering, and computer science & technology engage students during six consecutive Saturdays or Sundays. Students with demonstrated strengths in verbal/reading and/or math, depending on course, may apply. See https://www.ctd.northwestern.edu/eligibility for eligibility details.

Dates: October 17 – November 22, Saturday and Sunday options
Times: 9 a.m. – 12 p.m. Central Time; 1 p.m. – 4 p.m. Central Time
Tuition: $300
Application: visit my.ctd.northwestern.edu to begin your application.

Grades 3 - 4

Zoology: Classification & Characteristics
What types of evidence do scientists use to determine relationships between groups of organism?
What makes a bat a mammal and not a bird? How did scientists recently identify a 4th species of giraffe? What makes each animal unique? Young zoologists answer these questions and more while exploring the roadmap of animal structure, characteristics and classifications. Consider how animals survive and thrive in their respective ecosystems and what sets them apart, from each other and from humans. Through research and hands-on activities, recognize similarities among diverse organisms, and see how DNA from various animals can provide insights into their evolutionary history.

Neuroscience and the Brain
What is the nervous system and how does it engage with other systems in the body?
The brain controls everything you see, feel and think, determining how you act. Have you ever thought about how it does all of this? While the brain has been studied for centuries, doctors and scientists continue to learn new things about how it functions every day. In this hands-on class, students learn how the brain works and how brain functioning relates to their daily lives and habits. Apply key neuroscience fundamentals through demonstrations, model-building, and critical thinking experiments.

Brain Games: Math, Logic, and Computational Thinking
How do human brains and computers use similar processes to solve problems?
Explore and build a variety of mathematical, deductive reasoning and logic puzzles to build problem solving strategies and stretch your “math mind!” Through independent and collaborative efforts, students strategize solutions and grapple with games as they learn about the similarities between how humans solve problems and how we program computers to solve problems. In addition to having fun and feeling utterly puzzled, students develop a foundation of computational thinking skills for future programming and advanced mathematics courses.

Grades 5 - 6

Topics in Algebra: Expressions, Equations and Functions
How is algebra used in everyday life?
This course focuses on transferring concrete mathematical knowledge to more abstract algebraic applications. Areas of study include advanced algebraic concepts and how they are developed through mathematical reasoning, procedures, and critical thinking. Students explore operations on algebraic expressions, linear equations and functions. An emphasis is placed on practical applications and modeling throughout the course, along with oral and written communication skills concerning the language of algebra, logic of procedures and interpretation of results.

Wars Within: Allergies, Disease and Our Immune System
Does the human body cope with allergies the same way it copes with disease?
Discover how our bodies respond to allergens, disease causing pathogens, and everyday microorganisms by exploring different types of microscopic invaders. Investigate how each person's immune system keeps them healthy as well as the mechanisms that allow infectious diseases to spread between people locally and globally. This interdisciplinary course connects science, history, and current events.

Intro to Persuasive Writing and Debate
What elements of persuasive writing and presentation can a writer and speaker use to convince an audience?
Practice and apply elements of persuasive communication, including research processes, verbal and nonverbal communication strategies, persuasive writing elements, and presentation skills. Learn to form strong research-based arguments about real-world issues through comparison of argument strengths and weaknesses. Participate in a series of in-class presentations and debates about student-generated topics to develop and improve your persuasive communication skills.
Biomimicry: Nature, Adaptations and Engineering Design

How is design inspired by nature?

Biomimicry is the science that studies nature’s best ideas and then applies those designs and processes to solve human problems. Learn how to use a biomimetic approach to identify an everyday problem you experience and create a sustainable solution. Research strategies and patterns found in nature and apply those to the engineering design process. Sketch and build low-fidelity prototypes, deliver presentations, and start creating your own design portfolio.

Grade 7 - 8

Data Science: An Introduction

How can we predict the future using very limited data?

In 2013, the New York Times claimed that “data science is a hot new field that promises to revolutionize industries from business to government, health care to academia.” Seven years later, the demand for data scientists continues to grow - businesses, non-profit organizations, and government agencies are dependent upon data science to effectively make use of information to meet the needs of their clients. But how do math and computer science come together in this relatively new field? How can understanding mathematical concepts aid in making sense of seemingly endless data? Students develop the tools and insight needed to design probabilistic models based on real data. These models will then be used to predict future outcomes. Emphasis will be placed on problem-based learning and projects will largely be based in areas of student interest.

Biotechnology: The Helpful and the Harmful

How do advances in biotechnology affect society?

Genetic engineering, transgenic organisms, cloning, stem cell research and DNA fingerprinting - for over 4 decades, biotechnology has been changing the world as we know it. Explore the relationships among a variety of biotechnology topics, as well as their economic, social and medical impacts, and consider how this field is helping improve our everyday life. This course includes at-home exercises and interactive demonstrations that illustrate the essential techniques of biotechnology.

Story Slam: The Art & Craft of the Personal Narrative

What is storytelling? Why has it been used by every human culture throughout history?

Telling stories is one of the most powerful ways we have to influence, inspire, and connect with one another. In this workshop-oriented course, students explore the art of personal narrative to craft their own powerful stories. Students hone their active listening, critical thinking, writing and revision skills to create stories that translate to performance.