

Gifted India Network: Spring/Summer 2023

Explore a wide variety of interdisciplinary topics and core curriculum subjects. CTD provides high-quality enrichment for kids and adults to engage in together and deep explorations of core content for school-age students to do independently. Courses are primarily asynchronous, warranting approximately 2 – 5 hours of work per week. Virtual live sessions held over Zoom will take place two evenings a week.

Session Dates:

Spring 2023 April 17, 2023- April 28, 2023
 Summer 2023 (1) June 5, 2023- June 16, 2023
 Summer 2023 (2) July 10, 2023- July 21, 2023

Tuition per child (10% discount applied):
 Spring: \$595 Summer: \$635

Session	Course
Spring 2023	Forensic Science (Grades 6-8)
Spring 2023	Topics In Pharmacology (Grades 6-8)
Spring 2023	Topics In Engineering (Grades 6-8)
Spring 2023	Leadership for Today (Grades 7-10)
Summer 2023 (1)	Outbreak: Immunology and Infectious Diseases (Grades 6-8)
Summer 2023 (1)	Topics in Pre-Med (Grades 6-8)
Summer 2023 (1)	Jet Propulsion: Physics and Engineering (Grades 6-8)
Summer 2023 (1)	Social Entrepreneurship & Innovation (Grades 7-10)
Summer 2023 (2)	Aerospace Engineering & The Science of Flight (Grades 6-8)
Summer 2023 (2)	Introduction to Global Economics (Grades 6-8)
Summer 2023 (2)	Biotechnology: The Helpful and the Harmful (Grades 6-8)
Summer 2023 (2)	Dynamic Leadership Skills & Strategies for Success (Grades 7-10)

For additional information about the CTD Online Program,
 please contact us at ctd-online@northwestern.edu or 847/467-1536

Spring 2023 Course Descriptions

Forensic Science (6-8)

A half-eaten tuna sandwich, a blood spot, and lipstick on a glass: these might seem like completely unrelated elements at a crime scene but for forensic scientists, these could be clues to solve crimes. Explore the procedures utilized in crime scene investigation and forensic science and apply the scientific method to identify whodunit. Through hands-on labs and activities, students roleplay a forensics team investigating an active crime scene and learn the science behind forensic tests. Topics from physics, chemistry, and biology are covered as students delve into the world of the crime lab.

Topics in Engineering (6-8)

How do engineers develop solutions that address individual problems as well as large-scale societal and environmental problems? And where do they get their inspiration?

Engineering is the application of science, math, and design to solve a problem. In this hands-on survey course, learn and apply *design thinking* to problems affecting a range of users, from an individual navigating a specific challenge or physical disability, to a community lacking accessibility to safe drinking water, to a planet facing global environmental concerns. In a collaborative workshop environment, join expert CTD instructors while you explore topics such as human-centered design, biomimicry, civil engineering, and climate science, and develop 2D designs and 3D prototypes to address challenges faced by humans and humanity.

Topics in Pharmacology (6-8)

How do various chemicals affect the systems of the human body? How are the drugs prescribed by doctors developed, and what steps do researchers have to go through before those drugs make it into the hands – and bodies – of the patients? In this survey course, students learn about some of the biology (both cellular and molecular), biochemistry and physiology that comprises pharmacology, a branch of medicine that has been in existence since the 19th century. Topics include medical chemistry, research and development, pharmacokinetics, pharmacodynamics, pharmacogenetics, and compounding.

Leadership for Today (7-10)

Begin your leadership exploration here! Engage in interactive workshops on leadership topics, learn from business and nonprofit leaders, and develop critical thinking and public speaking skills. Expand your leadership capacity through reflective learning opportunities and build community in a supportive online classroom.

Summer Session (1) Course Descriptions

Outbreak: Immunology and Infectious Diseases (6-8)

How does the human body fight an infection? This hands-on course explores the human body and the different mechanisms that allow us to fight diseases and everyday pathogens. Investigate different infectious diseases, the history of deadly outbreaks across the globe, and the diseases scientists are fighting today. The class focuses on both historical and current events while investigating what causes different diseases, the mechanisms behind how they spread, and how the human immune system works to keep us healthy.

Topics in Pre-Med and Health (6-8)

Fascinated by the world of health and medicine, and curious about the topics one might encounter on the way to becoming a doctor, pharmacist, or other health care professional? Through collaborative projects, research, case study analysis and hands-on explorations, engage with several health and medicine-oriented subjects. Topics range from exploring research and current thinking in human anatomy, neuroscience, and psychology to infectious diseases, immunology, and public health. Throughout the course, learn and apply fundamental information about how the human body and healthcare systems work through individual and group projects.

Jet Propulsion: Physics and Engineering (6-8)

Nature has used jet propulsion to quickly travel from one location to another for hundreds of millions of years, as seen in squids, the chambered nautilus, some jellyfish and even dragonfly larvae. Even humans have found ways to harness it as a source of energy since at least the first century AD, when Hero of Alexandria developed the aeolipile. But how does jet propulsion work, and how can we use it in our own designs? Students explore the physics concepts seen in jet propulsion and use that knowledge to engineer and iterate their own creations.

Social Entrepreneurship & Innovation (7-10)

Explore some of the world's most urgent social problems and ways they are being addressed through creativity and capital. Draw from cases studies, lessons from emerging entrepreneurs, and group collaboration to design your own social innovation. Develop and pitch your business plan for a problem that inspires you to take action!

Summer Session (2) Course Descriptions

[Aerospace Engineering & The Science of Flight \(6-8\)](#)

How do the fundamental forces of flight work to get a giant machine off the ground? Apply the principles of aerodynamics to your own designs. 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 engineering process as you become an aeronautical engineer.

[Introduction to Global Economics \(6-8\)](#)

Macroeconomics examines whole economies on a global level. In this discussion-rich course, we'll address topics such as globalization, the role of government, human rights, nongovernmental organizations, artificial intelligence and mechanization, and climate change through readings, case studies, discussions, research, and critiques.

[Biotechnology: The Helpful and the Harmful \(6-8\)](#)

Genetic engineering, transgenic organisms, cloning, stem cell research and DNA fingerprinting - for over four 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.

[Dynamic Leadership: Skills & Strategies for Success with Gifted India Network \(7-10\)](#)

Broadcasting executive Donald McGannon noted "Leadership is action, not position." Learn how to build networks and consensus, tackle difficult decisions, use creative problem solving, and lead meaningful dialogue. Come away with skills and strategies to take your leadership capacity to the next level.

This course builds on the concepts introduced in Leadership for Today and provides opportunities to explore advanced skill-building and practices.