



Pre-Engineering Program

If you are interested in engineering, you'll find plenty to keep you busy and excited at Illinois Tech Armour College of Engineering in the suburbs! Our summer pre-engineering programs for high school students are conveniently located on Illinois Tech's Rice Campus in Wheaton. The four day/week-long engineering modules are M-Th from 10 am to 3 pm throughout the summer. Multiple modules are available to round out your student's pre-engineering education. Register with their highest interest topic for any one week, a handful of weeks, or all six weeks for an even wider exposure to engineering. Each weekly course is only \$795, including lunch daily.

INTRODUCTION TO THE WORLD OF ENGINEERING

Think you might be interested in engineering and want to learn more about it? Students will learn what biomedical, chemical, electrical, mechanical, civil and environmental engineers do in the jobs through speakers and hands-on activities. Activities using Arduinos and 3D printers will provide students an opportunity to explore areas of engineering in greater depth and see how math and science provides a basis for technology innovation. **Section A: June 11-14, Section B: July 9-12.**

INTRODUCTION TO THE WORLD OF ENGINEERING: FABRICATION STUDIO

Following Introduction to the World of Engineering, students can apply their skills and explore several design and fabrication techniques. The fundamentals of CAD software will be covered with an emphasis on producing functional components. Students will have the opportunity to use basic shop tools as well as laser cutters and 3D printers to complete their projects. Projects may incorporate the Arduino microcontroller as taught in the Introduction to the World of Engineering Course. Students must be present for the safety training taught on the first day. Prerequisite: Intro to the World of Engineering. **Section A: June 18-21, Section B: July 16-19.**

INTRODUCTION TO BIOMEDICAL ENGINEERING

Biomedical engineers improve our health and lives through advances such as artificial organs, sophisticated robot-operated surgical equipment, advanced medical imaging, and deep brain stimulation. In this course, students will be introduced to the range of opportunities and applications in biomedical engineering. Students will learn to use electrophysiology laboratory equipment and software to measure and analyze their own heart, muscle, and brain electrical signals. **Section A: June 18-21, Section B: July 16-19.**

INTRODUCTION TO CIVIL ENGINEERING

Civil engineering deals with design and construction of all kinds of facilities that we use in our everyday life. Roadways, airports, buildings, large and small, water treatment systems, railways and bridges are examples of facilities designed and built by civil engineers. Student will learn what civil engineers do in their jobs and about the broad scope of civil engineering through hands-on activities and field trips. **Dates: June 25-28**

INTRODUCTION TO COMPUTER-AIDED DESIGN (CAD)

Computer-aided design (CAD) deals with a variety of topics including creating simple drawings to 3D visualization of engineering design. This course is specifically focused on engineering design as it relates to building and construction. It is intended to familiarize students with basic elements of CAD, types and application of software used in design, versatility of CAD in allowing us to make quick changes in design, and compare one alternative with another, etc. Hands-on experience with simple CAD applications are also included in this course. **Dates: July 9-12**

INTRODUCTION TO ENVIRONMENTAL & SUSTAINABILITY ENGINEERING

Environmental engineering, the art and science of solving environmental problems and promoting sustainable growth relies on principles from biological, chemical, mathematical, physical, and social sciences. Environmental engineers deal with air, water, soils, and sediments on a scale that ranges from local to global issues. They work on problems like global warming, acidic rain, ozone depletion, and automobile emissions. In this course you will learn what environmental engineers do, perform hands-on environmental testing and analysis, and investigate how to solve challenging issues in sustainability. **Dates: June 25-28**

INTRODUCTION TO ROBOTICS & AUTOMATION

What do drones, thermostats and Wii systems have in common? They all need to take measurements from their environment and apply programmed logic in order to fly in the correct direction, keep the temperature of a room comfortable, and accurately capture your movements to win a game. Engineers across all disciplines use automation and robotics to control everyday devices, whole manufacturing plants, and the environment around us. Learn how to use a variety of sensors, build simple circuits, program Arduinos to design your own automated system, and explore other robotics hardware and software programs. **Section A: June 25-28, Section B: July 16-19.**