High School Summer Camps

Get a $100 discount when you register for an overnight camp by March 15.

PROJECT DISCOVERY

June 21-26 & July 12-19

Tracks Offered

- Aerospace Engineering
- Biomedical Engineering *(Only offered June 21-26)*
- Chemical & Biomolecular Engineering
- Civil/Architectural Engineering
- Computer Science
- Electrical/Computer Engineering
- Mechanical Engineering

Project Discovery is a week long, intensive learning camp for high school students (entering grades 9-12 in fall 2020) with a day or overnight option. Campers choose from different engineering disciplines and work closely with KU faculty and graduate students as they complete a hands-on project. Held on KU's Lawrence campus, students will get an up-close view of KU and the School of Engineering classrooms and labs. Get additional information and at: **www.engr.ku.edu/camps**.

Day Camp registration will open April 1.

Cost

- **Overnight** - Sunday-Friday- *Includes meals, housing and lab supplies*
  - Register by March 31 for $895
  - Register after March 31 for $995
- **Day Camp** - Monday-Friday 9am-5pm- *Includes lunch and lab supplies*
  - Registration opens April 1 - $395

Scholarships Available

A limited number of partial scholarships are still available for in-state applicants based on demonstrated financial need/economic hardship, academic criteria and a review of the requested student essay. **Apply now**.

Track Options

Aerospace Engineering

The week starts with an introduction to Aerospace Engineering, ranging from how airplanes fly to rockets and satellites in Space. Then we continue with the subject of how airplanes fly. The forces and moments acting on an airplane in flight namely, lift, drag, weight, thrust, pitching moment, rolling moment, and yawing moment are explained and demonstrated. The control surfaces of aircraft such as, aileron, elevator, rudder, as well as flaps and trim tabs will also be covered. The basics of helicopter flight will follow the purpose of the main and tail rotors, as well as the collective and cyclic pitch controls are explained. These subjects are clarified by the use of in-class video tapes, model airplane demonstrations, wind tunnel testing, etc. Then, the aerospace engines will be covered. In this part, the principle of operation of aircraft piston engines, jet engines, and rocket engines will be covered. Engine models, video tapes, engine animations, and engine simulators are used to support the lectures. Finally the supersonic flight, shock waves and sonic boom are covered. The morning lectures are supplemented by afternoon's laboratory sessions of wind tunnel testing, water tunnel testing, running the jet engine simulator, flying the aircraft simulator, and finally a visit to our flight test facilities at Lawrence Airport and observing operational drones, airplanes, etc. Moreover, we include a tour of our young Cube Satellite program which aims to be the first Satellite launched from the state of Kansas.

Civil & Architectural Engineering – *Two Options*

Building a Sustainable Future - June 22-26

Participants will engage in hands-on engineering methods for creating livable and sustainable spaces and systems for modern communities. We will explore how engineers design systems to provide quality water to communities and discharge clean water and air to the environment. We will see the means for designing very low energy buildings, more efficient transportation systems, and future structures better able to withstand floods, hurricanes, and other extreme events.

Engineering for a Healthy Planet - July 13-17

Participants will engage in hands-on engineering methods for maintaining healthy air, water and soil. We will see how engineers design systems to provide quality water to communities and discharge clean water and air to the environment. We will explore the means for providing protection for communities against floods and other natural disasters, and we will discuss modern transportation systems, sustainable building materials and designs, and creating livable communities.

Biomedical Engineering

The Biomedical Engineering course track will explore topics in engineering related to the human body. Each day will have some instruction on related topics and hands-on experimental components including dissections, design, and fabrication. Different labs will be toured so that students can see the variety of research going on at KU in this exciting area.

Chemical & Biomolecular Engineering

The Chemical Engineering course exposes students to a breadth of opportunities available to people who work in this exciting, science-based field of engineering. Chemical engineers create many of the things people use every day, including pharmaceuticals, biomedical devices, foods, plastics, fuels, microelectronics and many more. To make these things, chemical engineers must be able to acquire the raw materials and carefully control chemical reactions of many kinds to convert them into the finished products in the desired composition, forms and performance. They must be able to do this safely and cost-effectively while protecting the environment.

This course teaches students the key concepts used by chemical engineers in a wide range of industries by performing a variety of hands-on experiments that illustrate these principles. Experiments in pharmaceuticals, materials science, regenerative medicine, biotechnology and more will be performed. Students who love using chemistry and biology to make things will use all of their senses to explore opportunities in this field.

Computer Science: *Machine Learning & Artificial Intelligence*

Machine learning is the branch of artificial intelligence that will give us self-driving cars someday. It already is what Alexa and Siri use to understand our speech. In this camp, you will learn how to create software that utilizes machine learning tools to solve real world problems. Student will do coding on the state-of-the-art computers located in KU's Min Kao Engineering Design Studios.

Electrical & Computer Engineering: *Building Analog and Digital Circuits*

The Electrical and Computer Engineering (ECE) summer camp is a week-long, project based, camp where the students will learn the important fundamentals of ECE and how to construct both analog and digital practical electronic circuits. Examples of circuits under consideration will include digital circuits that comprise the building blocks or computers, automation systems, and robotics. Students will also practice in the lab the design and building of audio equalizers and amplifiers and body thermometers. Students will be learning fundamentals of radio communication systems that enable WiFi, smart phones, and TV broadcasting. In addition, students will also be exposed to ECE Computer-Aided-Design (CAD) and programming tools used in industry. This course will help the students get a wider view on different aspects and applications within ECE, and will enable them determine if ECE match their interests. Finally, no prior electrical and computer engineering knowledge is required for participants.

Mechanical Engineering: *The World of Entrepreneurial Engineering*

Learn how to think creatively, come up with solutions to problems, and implement those solutions in electro-mechanical hardware to solve problems that really matter! This course is to introduce students to the field of mechanical engineering through an exploration of its core areas including mechanics, kinematics, thermodynamics, material science, structural analysis, and electronics. By using principles and methods of design and analysis, students will be engaged through group work and project based learning in research and teaching laboratories.