Case School of Engineering

About

Collaborative research. Experiential learning. Solving urgent problems. 125 years of experience. An ecosystem of innovation. This is the Case School of Engineering at Case Western Reserve University.

- Offering 40 top-notch degrees
- Researching and creating new knowledge
- Located in the heart of culture, technology and learning
- Leading a making and innovating revolution

History

We started a long time ago. More than 130 years, in fact. It's part of our legacy of innovation. We have a history of deep and rigorous academic training and a robust research portfolio. We're proud to boast some of the world's oldest engineering departments, including 100 years of chemical engineering, 50 years of macromolecular science and 45 years of biomedical engineering innovations. We help found these fields and continue to carve out the gold standards of their education and research. We continue to push education to its fullest. Hands-on learning. Industry experience. Coupled with our tradition of core academic excellence. It's a formula that works.

Our lineage

Our history runs deep. The Case School of Engineering is part of Case Western Reserve University, which traces its roots to the founding of Western Reserve College in 1826. Our predecessor institution, the Case School of Applied Science, was established in 1880. It became the Case Institute of Technology in 1947 and then the Case School of Engineering in 1992.

Today's Case Western Reserve University emerged from the federation of the Case Institute of Technology and Western Reserve University in 1967, bringing excellence in engineering, the natural sciences and math, medicine, management, law, dentistry nursing and social work together under the same institutional banner and celebrating collaborative education and research initiatives across these diverse disciplines.

Our legacy of innovation

1963: We launched the nation's first macromolecular science/polymer academic degree
1970: We were one of the first nodes on ARPANET—the precursor to the internet
1971: We offered the country's first accredited computer engineering degree
1972: We rolled out one of the nation's first biomedical engineering degrees
2011: We launched the country's first academic program in wireless health
2014: We offered one of the nation's first undergraduate degree programs in data analytics

Undergraduate Programs

Aerospace Engineering- Develop high-flying technology—from aircraft and spacecraft to satellites and more.

Biomedical Engineering- Design the devices, technology and tools that help people live healthier lives.

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Chemical Engineering- Use not just chemistry but all the sciences to solve problems in practically every industry, from manufacturing to pharmaceuticals to renewable energy to food production.

Civil Engineering- Transform the world by creating the infrastructure that supports a safe and sustainable society.

Computer Engineering-Use hardware and software to develop faster, smarter, more capable computers.

Electrical Engineering-Move energy—in everything from integrating renewable power sources into the grid to designing the electrical systems that power the devices, tools and vehicles we rely on every day.

Engineering Physics-Combine the unique problem-solving approach of physics with engineering science and design to address new problems in our rapidly changing technological base.

General Engineering- Be a problem solver with a tool belt that includes a broad range of engineering fundamentals. Examples of career areas include pollution remediation, transportation, low-cost housing, elective medical care and crime control.

Materials Science and Engineering-Explore materials structure, properties and processing, including how materials impact many important technologies—from smart phones and car parts to satellites and solar panels.

Mechanical Engineering-Build and test all kinds of machines and mechanical systems, from next-generation engines to artificial joints to high-tech manufacturing plants.

Polymer Science and Engineering-Manipulate molecules to improve or create products for just about every conceivable application, from carpets and clothes to synthetic organs and tissues to jet fuselages and smartphone displays.

Systems and Control Engineering-Design, analyze, optimize and control complex systems for applications such as energy, manufacturing, transportation, robotics and biological systems.

Data Science and Analytics-Harness the power of big data and analytics for applications in nearly every industry, from manufacturing to health care to energy.

Computer Science (Bachelor of Science)-Turn computational systems everything from desktops to tablets to mobile phones from pieces of hardware into tools that solve problems and improve people's lives.

Computer Science (Bachelor of Arts)-Combine a technical degree with a broader liberal arts education to creatively analyze and solve computing problems.

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PreK-12 Opportunities

In collaboration with the Leonard Gelfand STEM Center at Case Western Reserve, the Case School of Engineering hosts and participates in a variety of STEM activities for school-age children and their families in Northeast Ohio. In engineering-related engagements, the school serves more than 1,400 preK-12 students annually with hands-on STEM (science, technology, engineering and mathematics) learning opportunities.

Hallmark annual programs include:

Engineering Challenges Carnival- Held during the school's Engineers Week each spring, the carnival welcomes hundreds of pre-K through 8th grade students and their families and introduces them to design thinking and engineering and science principles with fun, hands-on activities.

Girls Take Flight-Held in conjunction with NASA and the Girl Scouts of Northeast Ohio each spring, Girls Take Flight engages girls in grades 2 through 5 with aerospace science and engineering activities, introducing the world of airplanes, astronauts, rockets, comets, balloons, planets and spacecraft to future aerospace engineers.

Anatomy Camp-In conjunction with Case Western Reserve's School of Medicine, Anatomy Camp welcomes hundreds of invited middle- and high-school students from Cleveland and East Cleveland schools to learn more about anatomical structures and biomedical careers.

TECH CORPS and TECHie Camps-In conjunction with TECH CORPS and sponsoring partners, Case School of Engineering hosts multiple weeklong camps in the summer to engage students in grades 3 through 12 in activities that stimulate a deeper interest in technology, including topics like programming, 3-D printing, robotics and app development.

Case Engineering Education Summer Outreach Program-In partnership with the university's Center for Civic Engagement and Learning, Case Western Reserve students are hired to work in local community-based organizations that serve area youth to facilitate lessons and hands-on activities promoting engineering principles and disciplines to students underrepresented in STEM fields.

HOMEWORK

CLEVELAND STEP
Student Technical Enrichment Program

Case Western Reserve University – Engineering Challenges Carnival– February 23, 2019
Thwing Center 11111 Euclid Ave, Cleveland, OH 44106
This homework is due at the next session, March 16, 2019
www.clevelandwater.com/ClevelandSTEP

Name_____ Grade_____ Date _____
You must write in COMPLETE SENTENCES.

1. **Name two programs you are eligible to participate in at Case Western Reserve University.**

2. **In what year was Case Western Reserve University founded?**

3. **Case Western Reserve University was the first in the country to launch what two degree programs?**

4. **What engineering program deals with building and testing all kinds of machines and mechanical systems?**

5. **What engineering program might involve learning how to design devices, technology and tools that help people live healthier lives?**

6. **What engineering program focuses on designing, analyzing, optimizing and controlling complex systems for applications such as energy, manufacturing, transportation, robotics and biological systems?**

7. **What type of engineering program focuses on creating the infrastructure that supports a safe and sustainable society?**

The following questions are for students who attended the Engineering Challenges Carnival

8. **Name two engineering challenges you visited that were particularly interesting to you. Name the area of engineering for each and why you found each of them interesting.**

9. **Did your perception of the field engineering change after visiting the carnival? If so, how?**