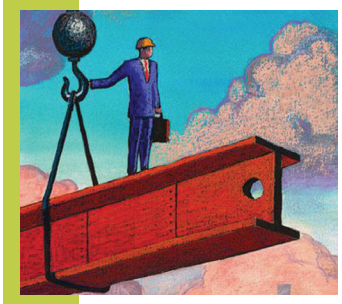
Lawrence Livermore National Laboratory

Celebrating Engineers Day

Discovering the world of engineering

Engineers apply scientific and mathematical principles, experience, judgment, and common sense to make things that benefit people. They design bridges and important medical equipment as well as processes for cleaning up toxic spills and systems for mass transit. In other words, engineering is the process of producing a technical product or system to meet a specific need.

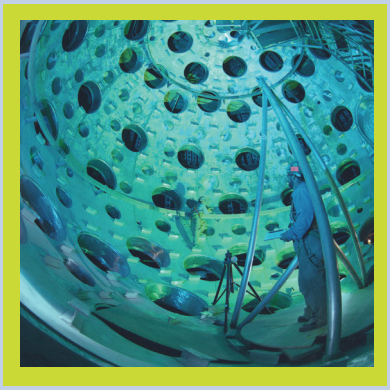
Engineers have many different types of jobs to choose from, including research, design, analysis, development, testing, and sales positions. If you are interested in discovering new knowledge, you might consider a career as a research engineer.



Xtreme engineering

You have heard of extreme sports — skateboarding, rollerblading, snowboarding — but have you ever heard of Xtreme Engineering? The engineers at Lawrence Livermore National Laboratory are famous for Xtreme Engineering — that is, developing systems that push technologies to their extremes (from the very small to the very large, and very precise at the same time).

The Engineering Department at Lawrence Livermore has a reputation for doing the impossible, or at least what most people thought was impossible. Engineers work with others at the Laboratory and in the Department of Energy's National Nuclear Security Administration to address national priorities — demanding even smaller parts, faster times, greater power, more complexity, and higher precision. LLNL Engineering has developed the world's smallest biomedical instruments and has helped to build the National Ignition Facility (NIF), the world's largest laser.



National Ignition Facility (NIF), the world's largest laser.

You could be an engineer

Engineers solve problems. They search for quicker, better, more efficient ways to use the forces of nature to meet tough challenges. Throughout the ages, from the building of the Egyptian pyramids to the landing on the moon, engineers have been the shapers of progress.

Where would you like to be in 15 years? Designing space stations that will explore Mars? Building earthquake-safe suspension bridges? Designing efficient systems to power cities? Saving lives through applying new laser techniques?

If you choose a career in engineering, you can help make these great things happen. ◆

There are many kinds of engineering

If you are imaginative and creative, design engineering may be for you. The work of analytical engineers most closely resembles what you do in your mathematics and science classes.

If you like laboratory courses and conducting experiments, look into becoming a development engineer. Sales engineering could be a good choice if you are persuasive and like working with people. Engineering contains many fields of study.

The five largest fields are chemical, civil, electrical, industrial, and mechanical engineering. There are also more specialized engineering fields, including aerospace, ocean, nuclear, biomedical, and environmental engineering. ◆

Thank an engineer. . .

Did you ride in a car today? Did you listen to your DVD player? Are you planning a trip to an amusement park to ride a roller coaster? If so, you can thank an engineer!

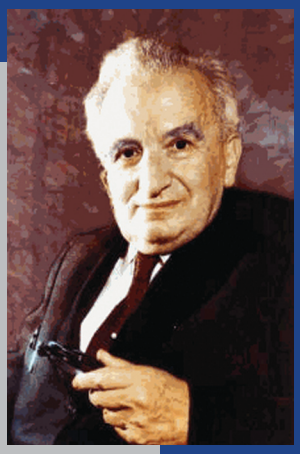
Engineers then and now

Theodore von Karman

This famous aerospace engineer was born in 1881 and died in 1963 in Budapest, Hungary. He is considered to be one of the great aeronautical scientists of the 20th century.

He developed many theories of aeronautical and space science, such as the effects of forces and currents on aircraft and spacecraft. He was instrumental in developing supersonic aircraft and Intercontinental Ballistic Missiles, and was involved in the practical side of developmental breakthroughs in aviation. ◆

"Scientists discover the world that exists; engineers create the world that never was."

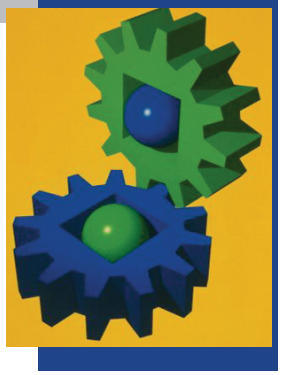


Theodore von Karman

David McCallen

Structural mechanics engineer Dave McCallen, works with seismologists and other engineers to perform computer simulations that test large structures like bridges, dams, buildings and industrial facilities. These simulations determine how various mammoth structures will respond during earthquakes in California.

McCallen's detailed computer modeling has helped CalTrans retrofit highways in Oakland. He has also studied how long-span arch bridges along California's coast -- like the San Francisco Bay Bridge--will respond to earthquakes. His studies will improve structural designs and probably save lives in the "Big One." ◆



Dave McCallen , Lawrence Livermore engineer, studies the Bay Bridge to see how well it responds during earthquakes.

Name the famous engineer . . .

Answers below

- He is a Bay Area resident who created the popular comic strip "Dilbert," and once worked as a computer engineer at Pacific Bell. Who is he?
- He is a former astronaut who became the first man to walk on the moon on July 20, 1969. Who is he?
- He invented over 1,000 items including the light bulb, the phonograph, and one of the first types of instruments to view movies. Who was he?
- He invented the telephone and developed techniques for teaching speech to the deaf. Who was he?
- He built the first automobile and devised the factory assembly line. A car company is named for him. Who was he?
- He was the 39th President of the United States whose home is in Georgia. Who is he?

Scott Adams | Neil Armstrong | Thomas Edison | Alexander Graham Bell | Henry Ford | Jimmy Carter