

Your career and the future

There will be many jobs for engineers during the next decade. However your engineering specialization may determine such things as the geographic area where work may be found, salaries, job conditions, and tasks that will challenge you.

Engineers earn considerably more than other people who enter a career path with just a bachelor's degree. Sometimes this can be as much as 75-100% more per month depending on geographic location and engineering specialty.

Engineering is a rewarding career option that will make you feel good about contributing to a healthier, safer, and more enjoyable life for your fellow citizens. As you plan your future, consider becoming an engineer, a shaper of the 21st century.



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ENGINEERING AND YOU



*The mission of CSPE is to advance and promote the
profession of engineering*

Where will you be in ten years?

Designing spacecraft to explore the Milky Way?
Building nuclear engines to power cities?
Saving lives through new laser applications?
Applying computer technology to solving problems in the 21st century?

As an engineer you will be on the cutting edge and will help produce startling improvements for people throughout the world.

Engineers Turn Ideas Into Reality

Engineers are problem-solvers—people who make things work better, more efficiently, quicker and less expensively. They serve humanity with skill and dedication and search for better ways to solve problems.

Engineering offers:

- ◆ Challenging jobs
- ◆ Good pay and benefits
- ◆ Lasting and tangible products
- ◆ Help to humankind
- ◆ Prestige and status

Teaming Up for Success

Engineers often work with other people on projects. When engineers, scientists, technologists and technicians work together it is called an engineering team.

The engineer has a strong science, mathematics and technology background and is a team leader. Engineers plan, design and supervise engineering projects from concept to completion.

An engineering technologist translates the engineer's designs into systems and projects while the engineering technician collects and analyzes data, develops designing layouts, inspects work checks and repairs equipment and prepares reports for the engineering team.



Preparing for the Challenge

Engineers solve problems by relying on their creative and academic skills. You should enjoy problem solving and be challenged by the effort it requires!

While in high school you should take:

- ◆ Algebra I & II
- ◆ Trigonometry
- ◆ Biology
- ◆ Physics
- ◆ Social Studies (3 units)
- ◆ Fine Arts/Humanities (1-2 units)
- ◆ Computer Programming or Computer Applications
- ◆ Geometry
- ◆ Calculus
- ◆ Chemistry
- ◆ English (4 units)
- ◆ Foreign Languages (2-3 units)

For engineering, Advanced Placement or Honors level courses are recommended. Combined scores of 1000 (SAT) or 20 (ACT) should be your goal.

Engineering technologists need to meet the same general high school requirements, but Advanced Placement and Honors courses are not necessary. The engineering technician should have algebra and geometry and two years of science. Drafting or computer applications or similar technical courses are also recommended for the potential engineering technician.

Colleges seek “well-rounded” students ... Extracurricular activities, such as MATHCOUNTS at the junior high school level or JETS activities at the high school level, and part-time or summer jobs help.

What do engineers do?

Engineers today work on tomorrow's problems. For example:

Chemical engineers seek to make our world better by devising systems to control pollution by trapping harmful pollutants before they spread into the air—looking for hardier strains of wheat, rice, and corn that will survive drought, insects, and disease and thus ease world hunger; designing high strength plastic composites that are stronger but lighter than steel; and joining the war against cancer, AIDS, and other deadly diseases.

Civil engineers design solutions to cope with many of our planet's most serious problems—foul air; decaying cities, roadways, and bridges; clogged airports and highways; polluted streams, rivers, and lakes. They also design the transportation systems we will use to colonize the moon and the buildings we will live in.

Electrical engineers design products that meet human needs for today and tomorrow—huge power-generating systems in dams as well as the tiny electronic circuits that keep spacecraft on correct trajectory a billion miles from Earth. They create the electronic components that run computers, TVs, stereo systems, and automated factories and seek ways to improve the transmission of messages by laser beams.

Mechanical engineers can make our lives more comfortable by designing more efficient transportation and delivery systems for raw materials or products—improving the use of cryogenic techniques for super-conductivity, improving the work environment through increased use of automation and robotics, more efficient heating, ventilation or refrigeration. They may even completely redesign the manufacturing process with special machinery to make production easier and more efficient.

Other Engineering Specialties include:

- ◆ Aerospace (Aero or Astronautical)
- ◆ Automotive
- ◆ Ceramic
- ◆ Computer
- ◆ Environmental
- ◆ Fire protection
- ◆ Geothermal
- ◆ Industrial
- ◆ Manufacturing
- ◆ Materials
- ◆ Mineral and Mining
- ◆ Naval
- ◆ Ocean
- ◆ Petroleum
- ◆ Plastics
- ◆ Safety
- ◆ Software
- ◆ Agricultural
- ◆ Architectural
- ◆ Bio-engineering (Bio-medical, Bio-mechanical, Bio-chemical)
- ◆ Geological
- ◆ Heating, Ventilating, Air-conditioning and Refrigeration
- ◆ Metallurgy and Materials
- ◆ Nuclear
- ◆ Optical
- ◆ Plant
- ◆ Robotics and Automated Systems
- ◆ Transportation

After High School—What?

Engineering is a difficult major. It requires a considerable amount of time and energy...but the rewards are worth it.

A bachelor's degree in engineering is available through:

- ◆ A four- or five-year accredited college or university program;
- ◆ Two years in a community college engineering transfer program plus two or three years in an engineering program;
- ◆ Three years in a science or mathematics major and two years in engineering;

- ◆ Five to six years in an engineering co-op program (A co-op program allows students to attend classes for a portion of the year and then work in an engineering-related job for the remainder of the year. They graduate with valuable work experience sought by employers.); or
- ◆ Eight to ten years as an evening engineering student.

How do I pay for college?

...through a combination of:

- ◆ Part-time employment and summer jobs
- ◆ Scholarships and grants
- ◆ Loans from the school, a bank, or family
- ◆ Special programs such as ROTC or veteran's benefits
- ◆ Co-op and work-study program.

After college—careers with a future

A bachelor's degree in engineering will offer you a wide variety of job options in:

- ◆ Industry
- ◆ Business
- ◆ Consulting
- ◆ Marketing
- ◆ Management
- ◆ Government
- ◆ Research
- ◆ Teaching
- ◆ Sales
- ◆ Military

An engineering degree can also open doors to other professions such as medicine business administration, law, computer development or others. Or you may also wish to pursue further education and obtain a master's or doctoral degree in engineering.