

## WHAT IS AN ENGINEER?

Engineers affect every facet of life from space travel and cars, to roller coasters and soft drinks. Engineering can be loosely defined as "... the application of math and science to create something of value from our natural resources..." (www.discoverengineering.org).

## KINDS OF ENGINEERS

There are many different kinds of engineers:

1. Aerospace/Aeronautical
  2. Agricultural
  3. Biological
  4. Biomedical
  5. Chemical
  6. Civil
  7. Computer/Software
  8. Electrical
  9. Environmental
  10. Geological/Geophysical
  11. Industrial
  12. Manufacturing
  13. Marine/Ocean
  14. Materials (Ceramics, Metallurgy, ...)
  15. Mechanical
  16. Method (Operations productivity)
  17. Mineral and Mining
  18. Nanotechnology (Cross-discipline)
  19. Nuclear
  20. Robotics
  21. Transportation
- ... and more.

## FUN/INFORMATIVE SITES

<http://www.engineeringk12.org>

<http://www.discoverengineering.org>

<http://www.nerdgirls.org>

<http://www.engineergirl.org>

<http://asee.org>

<http://www.alice.org>

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<http://www.learner.org/exhibits/>

<http://www.greatachievements.org>

<http://women.cs.cmu.edu/ada/Resources/Women/>

<http://www.uic.edu/orgs/gem-set/>

<http://pbskids.org/designsquad/>

<http://www.mos.org/eie/>

<http://www.greatwomen.org>

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[http://ewh.ieee.org/r2/southern\\_nj/wie/](http://ewh.ieee.org/r2/southern_nj/wie/)

<http://www.ieee.org/>

<http://www.ieee.org/women/>

IEEE Women in Engineering (WIE) of South Jersey  
President: Heather Tomasello



# WHY BECOME AN ENGINEER?



## THE RIGHT CLASSES TO TAKE IN HIGH SCHOOL

The following is a list of classes that you can take in high school to make college easier.

### Best Classes:

#### ➤ Math

- ◆ Algebra
- ◆ Geometry
- ◆ Trigonometry
- ◆ Calculus

#### ➤ Science

- ◆ Biology
- ◆ Chemistry
- ◆ Computer
- ◆ Environmental
- ◆ Physics

#### ➤ Business

#### ➤ Computer Applications/Typing

Here are engineering skills that are often important to finding out what to build and how to make what you create useful:

- ◆ Communication Skills
- ◆ Creative Writing
- ◆ Graphic Arts
- ◆ Ergonomics
- ◆ Languages

## WHY BECOME AN ENGINEER?

### Salary

Average starting salaries of engineers are much higher than salaries for graduates with bachelor's degrees in most other fields. According to the National Association of Colleges and Employers, 2009 graduates in civil engineering may expect salaries of \$50,785, biomedical engineering grads may expect salaries of \$46,520, computer science grads may expect \$56,128, mechanical engineering grads may expect \$58,648, and chemical engineering grads may expect \$65,466. Engineering salaries have been higher than average salaries for the last 40 years.

### Time

Most entry-level engineering jobs only require a bachelor's degree, which usually takes 4 to 5 years to get. Becoming a lawyer takes at least 7 years. Becoming a medical doctor takes even longer; school and residency can take about 11 years.

### Work

As an engineer you could have the opportunity to do cool stuff like design roller coasters, planes, bridges, and games. You could invent a product, like a new cell phone, or a device that improves the lives of people. You might develop new technology with many different uses; for example, technology developed for space communications have been used in pacemakers to save lives.

You can make a difference in the world by becoming an engineer. Look at all the things around you that you use and enjoy that had to be created by figuring out how to make something useful for people.

## HISTORY

Women engineers have been particularly active in cutting-edge technologies.

**Ada Byron Lovelace** wrote a paper in 1843 anticipating the development of computer software (including the term "software"), artificial intelligence, and computer music.

**Rear Admiral Grace Murray Hopper** was a computer pioneer who was awarded the National Medal of Technology, the nation's highest honor in engineering and technology. (AMUSING FACT: Grace is also credited for first using the word "bug" to mean a computer error. Grace discovered that the computer she was working on crashed because a moth flew through a Harvard lab window, whacked into a vacuum tube, and brought the whole system down!)

**Stephanie Louise Kwolek** developed Kevlar, a material used in planes, fiber optic cables, and bulletproof vests.

**Hedy Lamarr**, WWII actress, invented an anti-jamming device to use against Nazi radar.

**Dr. Bonnie J. Dunbar** helped to develop the tiles that enable the space shuttle to re-enter the earth's atmosphere and survive.

**Mary Anderson** designed and patented the first windshield wiper.

**Evelyn Boyd Granville** developed software used in both the Mercury & Apollo Projects.

**Beulah Louise Henry** was known as the "Female Edison" for her many inventions.

Some women to watch: **Randice-Lisa Altschul**, toy inventor; **Laurie Marshall**, NASA engineer; **Allison Yale**, engineering psychologist; **Anna Nagurney**, network systems expert; **Zhenan Bao**, chemical engineer.