

The examples inside are just a sample of the things engineers do every day. You should talk to your counselors, parents, and friends about your dreams and how to make them a reality. Talk to a few engineers about what they do.

And check out these websites to explore the world of engineering.

**National Action Council for Minorities in Engineering**

[www.nacme.org](http://www.nacme.org)  
[www.nacmebacksmc.org](http://www.nacmebacksmc.org)

**Engineering Your Life**

[www.engineeringyourlife.org](http://www.engineeringyourlife.org)

**Project Lead The Way**

[www.pltw.org](http://www.pltw.org)

**Engineer Girl**

[www.engineergirl.org](http://www.engineergirl.org)

**Manufacturing Is Cool**

[www.manufacturingiscool.com](http://www.manufacturingiscool.com)

**FIRST**

(For Inspiration and Recognition of Science and Technology)

[www.usfirst.org](http://www.usfirst.org)

**Try Engineering**

[www.tryengineering.org](http://www.tryengineering.org)

**Engineers Without Borders**

[www.ewb-usa.org](http://www.ewb-usa.org)

**NACME**  
National Action Council for  
Minorities in Engineering, Inc.

440 Hamilton Avenue, Suite 302  
White Plains, NY 10601-1813  
Phone: 914-539-4010  
Fax: 914-539-4032  
[www.nacme.org](http://www.nacme.org)

ENGINEERING

THE  
POWER  
TO DO

**NACME**  
National Action Council for  
Minorities in Engineering, Inc.

# DREAMS Need Doing



Engineers solve problems and make life better. They use science and math



to solve problems that people face every day—and they create a better world. Some engineers design better roads and buildings. Others build rockets to explore the stars or boats to explore the seas.



They help the disabled get around more easily.

They make life fun—designing toys, bicycles, computer games, and televisions.

**Σ It's hard to imagine much getting done in this world *without* engineers.** Which means that whatever

interests you, engineers have something to do with it.

Interested in music? Engineers design theaters for concerts, recording equipment, and iPods.

Care about the environment? Engineers are making power plants and cars that pollute less. Love fashion?



Engineers are creating new materials for clothes. Into sports? Engineers design training equipment, high-tech sports shoes, snowboards, and protective gear. The ideas are as endless as your imagination.



# Life Takes Engineering

At the heart of all engineering is a problem. Engineering is the science of solving these problems; engineers use math and science to identify what causes a problem and then find a solution. Learning these tools will make you an expert at solving problems. And you'll help create a new world.

## Marvels of Engineering

- Engineers connected two islands in Japan with the longest suspension bridge in the world, almost two and a half miles long.

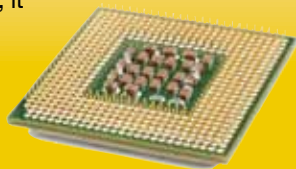


- Beginning more than 2,000 years ago, engineers built the only artificial structure that can be seen from space—the Great Wall of China. The Great Wall, thousands of miles long, helped protect China from invaders.



- Engineers connected the Atlantic and Pacific oceans by tunneling a 51-mile canal through Panama.

- It took decades for engineers to develop the tiny microchip. Smaller than a penny, it is the brain of all the electronic devices we use today: computers, MP3 players, cell phones, satellites, and even jet plane controls.



## Basic Tools

You're already learning many engineering skills in school. Ratios, fractions, algebra, geometry, chemistry, biology, astronomy, and physics are all tools that engineers—and you—can use to solve problems.



Most engineers focus on a certain subject. Mechanical and civil engineers use the principles of physics—understanding how gravity, momentum, friction, machines, and forces of nature interact—to build cars, trains, bridges, or buildings. Electrical engineers use an understanding of the properties of atoms to generate and deliver power to people. Biomedical engineers combine biology with physics to make artificial organs, limbs, and medical equipment.



## Work Well with Others

To be an engineer, you need to have a good grasp of math and science—but engineering is much more than math equations. What excites engineers is the chance to make a difference and help people. Engineers are driven to solve the problems of the world: finding clean energy sources, designing better machines, helping the poor, making work easier and safer, and helping



everyone have good lives. They're curious about how things work, and they have the imagination and drive to make things work better. Most engineers work in teams, sometimes with doctors or other scientists—but also with musicians, writers, artists, and everyday people. Engineers work in so many different areas that there is no typical engineer: they come from all walks of life, from every culture. In fact, when a team has members with many different backgrounds and experiences, the team is more apt to bring new and creative solutions to the world's problems. Everyone has his or her own talents and ideas. The best engineers are able to listen to other people's ideas and work with them.

**“Your hard work pays off”**

When Natasha Wilson worked as a civil engineer with the Port Authority of New York and New Jersey, she loved seeing her ideas come to life.

She helped design airport runways, airplane hangars, and landing strips. “I was able to see the practical side of my education and see something transferred from paper to real life,” she says. “The signage at JFK—I helped work on that. To see it being used and [to know it's] better than it used to be is rewarding. Your hard work pays off.”

Wilson is one of the few minority women working in a field largely dominated by white guys. She says it's never been a problem. “I didn't really pay attention to it. And I still don't pay attention to it,” she says. “I don't really notice it until someone mentions it. Even in school, it wasn't really emphasized that I was one of the few girls there. Once you like what you're learning, [you don't get] distracted by other things.”

Wilson knows that a lot of kids are scared by math and science classes. But these classes aren't as tough as they seem.

“Don't let your dislike or your non-expertise in one or two things discourage you from pursuing engineering,” she says. “If you like designing things, you can use your imagination. Engineering is a field where you learn to do more with less, or something with nothing.”

Wilson now works in management, but she still uses her engineering background. She hopes to see more minorities and women in the profession. “Don't let the fact that there are just a few of us stop you.”



**Natasha Wilson, NACME Scholar and recipient of the Sidney and Katherine Friend Scholarship**