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# Engineers Week Celebrates Awesomeness

By Margarita Barresi

You probably take a shower in the morning, apply deodorant, blow-dry your hair, check your cell phone, eat breakfast, and drive to school in a car while listening to an mp3 player. Believe it or not, at least 12 types of engineers (Environmental, Water Resource, Chemical, Electrical, Mechanical, Software, Communications, Agricultural, Automotive, Petroleum, Civil, and Audio) make it possible for you to enjoy this routine.

A STEM (Science, Technology, Engineering, and Math) field, engineering is often called “the silent profession,” because it touches our lives in so many ways without our realizing. Each February, the National Engineers Week Foundation shines the spotlight on engineering’s contributions to society and encourages students to pursue engineering careers. The week-long celebration coincides with President’s Day in honor of George Washington, who was a surveyor and who many consider the nation’s first engineer.

Each year the Engineers Weeks Foundation sponsors several national events, such as “Introduce a Girl to Engineering Day” and the “Future City Competition,” where middle school students envision and design a city 150 years into the future. But the majority of events are held locally at high schools, colleges and universities, corporations, professional societies, and government agencies throughout the country. This year, the theme for Engineers Week was “Celebrate Awesomeness.”

High school students participated in events ranging from robotics competitions to corporate lab tours to breakfasts with expert speakers. At a FIRST Tech Challenge hosted by the University of

Iowa’s College of Engineering, teams of high school students constructed robots that moved over a twelve-foot square field in a game called “Get Over It!” Teams scored points as the robots retrieved and deposited six-inch batons in different containers.

In Alabama, members of the U.S. Army Corps of Engineers from the Huntsville Center spoke with more than 300 local high school students about STEM careers. Students then worked in teams to see who could build the tallest tower out of spaghetti pieces and marshmallows in just 15 minutes.

In Orlando, Florida 24 teams of high school students participated in the “Robario Kart Competition,” a live robotic version of the Mario Kart video game, sponsored by Lockheed Martin. Students had seven weeks to design, build, and test their robots with the mentoring of Lockheed Martin engineers. On competition day, the teams and their robots endured three races on an obstacle course before battling it out in the final championship round.

Colleges and universities held week-long celebrations for students. Activities included student career fairs, research showcases, guest speakers, awards banquets, and silly events like “Dress Like Your Professor Day” or a “Mr. Engineer” battle of “brains and glory” held by the Iowa University student chapter of the Society of Women Engineers. There were even engineering themed scavenger hunts and talent shows. The most popular events, however, were definitely the competitions.

At the University of Delaware, students showcased their aerospace engineering skills during a paper airplane competition.



Their mission was to craft the airplane that could travel the farthest distance and hit a target while surviving Nerf gun attacks. Students at Southern Utah University competed to see who could build, out of just wood and glue, the lightest bridge that could still support 20 pounds of weight.

Drexel University students and faculty competed to see whose egg would survive a 28-foot drop into a landing zone. Students had to think creatively to find ways to cradle their eggs. Using only cardboard and duct tape, Binghamton University students competed to build a boat that would hold up to two people and make it across the school pool for at least one lap. The boat with the fastest time won. And, at Michigan Technological University, students build sleds out of cardboard and raced them in the snow.

Rutgers University sponsored the “Celebrate Awesome” Photo Contest, and asked students to illustrate the awesomeness of engineering through visual expression. First place winner Kirsten Rauffer, a freshman in the Engineering School, says she chose to submit a photo that celebrates the beautiful things engineers create. Her photograph shows her father blasting steam to bend a piece of mango wood for the sides of a ukulele they’re constructing.

While the events of Engineers Week were as diverse as the field of engineering itself, they all had something in common. They all celebrated the diversity of this field and its awesomeness.



### Kayla Mitchell

Hometown: Dayton, OH  
 School: Dayton Early College Academy (DECA)  
 School Year: Junior  
 Intended Major: Biomedical Engineering  
 Career Aspiration: Would like to make a difference in people’s lives

“Engineering is always evolving,” says Kayla Mitchell. “Nothing ever stays the same. It makes me think about how we can make life better for people.”

At school, Kayla is currently taking a modeling and simulation class where she uses Solid Works software to make 3-D models. During Engineers Week, she visited CH2M Hill, a global leader in design and operations consulting, for some hands-on experience. Her team built a tower out of paper and tape that was at taller than two-feet high and could hold a tennis ball.

From this event and engineering in general, she’s learned the importance of trial and error. “It’s okay to make mistakes, because that’s the only way you learn,” she says.



### DeeAnn Turpin

Hometown: Leavenworth, KS  
 School: Kansas State University  
 School Year: Senior  
 Intended Major: Biological Systems Engineering  
 Career Aspiration: To design more efficient water treatment systems



### Ellesse Bess

Hometown: Detroit, MI  
 School: Michigan Technological University  
 School Year: Senior  
 Intended Major: Chemical Engineering  
 Career Aspiration: Devise treatments to eradicate HIV and cancer as a laboratory engineer.

The sole student panelist in the “Introduce a Girl to Engineering Day” live Twitter chat, DeeAnn enjoys encouraging others to pursue an engineering career. “It’s great to see kids, especially girls, get interested in science,” she says.

During the 2012 Engineers Week, DeeAnn was awarded the first-ever New Faces of Engineering college edition award. This accomplished young woman has traveled to India, Guatemala and Ecuador with the Engineers Without Borders organization. In Ecuador she implemented a new water distribution system, getting clean water to people who had never had it before.

“I became involved in this organization as a freshman, and have had an opportunity to move up in leadership. It’s been one of the most rewarding experiences of my college years,” she says.

Ellesse knew she wanted a career in the medical field, but not as a doctor or pharmacist. She decided to approach the medical field indirectly and researched different branches of engineering with applications in the medical sciences. “Chemical engineering was the most appealing because its concepts have application across many fields of study,” she says.

During Engineers Week Ellesse participated in an event hosted by the school’s Tau Beta Pi Engineering Honor Society, for which she serves as vice-president. The “Engineering Futures” event consisted of a series of exercises to help develop the skills engineers need for working in teams.

## Introduce a Girl to Engineering Day

One of Engineers Week’s biggest initiatives was the 12th annual “Introduce a Girl to Engineering Day.” Dedicated to the memory of Dr. Sally Ride, “Girl Day” connects thousands of women engineers with more than one million girls in grades K through 12.

This year, “Girl Day” included a live **#STEMchat** on Twitter, reaching more than 500,000 girls and their parents.

Is a special engineering day just for girls really necessary? Yes, according to Karen Horting of the Society of Women Engineers. “Studies show that girls begin to turn away from math and science in middle school,” says Horting. “We need to get them interested again and let them know they can really make a difference in people’s lives through an engineering career.

People need to stop saying, ‘Oh, that’s not for girls.’” Traditionally a male-dominated field, Horting believes engineering needs more women and people of color. “Companies are engaged in activities to get more diversity into the profession, because we know diverse teams are simply more innovative,” she says.

The Society of Women Engineers sponsors many events during Engineers Week that focus on providing hands-on experience building things. According to Horting, when participants build something they gain confidence in their abilities and also learn the importance of failure. “Nothing in engineering works the first time around,” she says. “Trial and error is the cornerstones of engineering.”





### Dilan Singh

Hometown: Apopka, Florida  
 School: Apopka High School  
 School Year: Senior  
 Intended Major: Mechanical Engineering  
 Career Aspiration: Design for a large company such as Lockheed Martin

Part of a team of five who participated in the Lockheed Martin “Robario Kart” competition, Dilan says the event was really fun.

With guidance from a Lockheed Martin engineer, the team built a robot that could pick up a figurine and get her over an obstacle course finish line. One of the robot’s arm was covered in duct tape, like a lint roller, so it could pick up small poker chips along the way for extra points. A motorized mechanism then pushed the arm back and scraped the chip off into a receptacle.

“I learned to really analyze the task you have to perform before you design,” says Dilan. “We had a price limit, so we worried less about extras such as style, and more about what we could sacrifice and still get the desired result.”



### Ziyang Huang

Hometown: Yorktown, VA  
 School: Drexel University  
 School Year: Sophomore  
 Intended Major: Materials Science and Engineers  
 Career Aspiration: Obtain an advanced degree and work in polymer biomaterials research

Ziyang’s was one of 24 teams participating in Drexel’s Engineers Week egg drop event. The objective was to see whose egg can fall at the fastest speed from the highest height without breaking. “It sounds easy,” says Ziyang, “But you actually need to consider many factors. I spent an hour and a half calculating things like force, absorption, and dropping time.”

Because participation was part of a class assignment, Ziyang’s team had an additional constraint: all materials used had to be polymers. They used a microbead pillow, plastic bags, and foam, and won the contest after a 26-foot drop. The team had already tested the device with a 36-foot drop, so they knew they had a winner.

## Careers in Engineering

Few fields are as diverse as engineering. Here’s a sampler of the types of engineering careers you could pursue:

**Aerospace:** Design aircraft, spacecraft, satellites, missiles, and rockets.

**Agricultural/Biological:** Create advances in farming and agriculture, and apply engineering design and analysis to protecting natural resources.

**Bioengineering/Biochemical:** Work on food safety, waste destruction, and contaminated soil and water cleanup.

**Chemical:** Discover and manufacture better plastics, paints, fuels, fibers, medicines, fertilizers, semiconductors, paper, and all kinds of chemicals.

**Civil:** Oversee the construction of the buildings and infrastructure that make up our world: highways, skyscrapers, railways, bridges, and water reservoirs.

**Computer:** Design, build, and maintain computers and computer-controlled equipment.

**Electrical:** Work with electricity, from the huge power grids that light up cities to microscopic electrical devices.

**Environmental:** Develop ways to stop pollution and protect our natural resources, from keeping our oceans clean to designing more effective recycling systems to finding safe ways to dispose of toxic waste.

**Mechanical:** Design anything that involves a mechanical process – from a bike lock to a car engine, working in nearly any area of technology, from aerospace and automotive to computers and biotechnology.

**Nuclear:** Research and develop the processes, instruments, and systems used to get benefits from nuclear energy and radiation.

**Petroleum:** Study the earth to find oil and gas reservoirs and design oil wells, storage tanks, and transportation systems to supply the world’s need for energy and chemical raw materials.