



Emily Woods  
Chief Engineer/ Co-Founder at Sanivation™  
[www.sanivation.com](http://www.sanivation.com)  
ME grad 2010 from Georgia Tech

What is an engineer?

I've come to the conclusion that an engineer is at the most important core, simply a problem solver. I like how Wikipedia writes it: engineers are "concerned with applying scientific knowledge, mathematics and ingenuity to develop solutions for technical, social and economic problems." The word *engineer* is derived from the Latin roots *ingeniare* ("to contrive, devise") and *ingenium* ("cleverness").

So how do we learn to devise with cleverness? I agree that a very large tool box of skills is needed as an engineer and many of those we learn in university. While we may not use everything classes teach us, a basic understanding of calculus, heat transfer, dynamics, physics and such will start us down the right track. Other tools we can learn from various experiences in the engineering field. But I truly believe the core of problem solving capabilities comes from nothing better than solving problems! Solving various types of problems, in many differing situations, where you hold the responsibility and you make the decisions. But this is so hard to come by as an undergrad student. It is a rare chance and incredible opportunity where a company will allow an undergrad student to have such a responsibility—to solve real problems.

This is why I am so thankful I was offered the opportunity to work with Southwestern while I was a student at Georgia Tech. The Southwestern Advantage summer internship program not only allows--but encourages, motivates, and teaches--college interns to run their own company. While running my own company was never something that interested me, this job forced into independence and responsibility because I was in charge. I was placed in situations away from home, away from family and friends, doing a job I knew little about. But that is exactly what I needed to learn how to solve problems. In this summer job, I was met with so many various problems, daily. By encountering problems in logistics, self motivation, supplies, efficiency, time, money...all while dealing with people of all economic and cultural identities...and I being the person who accepted the responsibility...then I truly understood how to solve problems in all those areas and so many more.

Just the process of learning to solve a problem on your own was such an incredible adventure. I learned how it felt to deal with the pressure of responsibility and decision making. Learned how much I love the feeling of solving my own problems and coming out successful on the other side. Yes, working with Southwestern forced me to deal with many more problems than the normal college student ever should, but that experience is what made me unlike any other college student and lead to me having my dream job at 24 years old.

Southwestern changed the trajectory of my life. My first summer taught me the skills and honed the habits of time management and self-discipline that made university rather easy for me. Suddenly studying and making top grades was achievable. My second summer I learned how to express myself and impact those around me. Upon returning to



Emily Woods  
Chief Engineer/ Co-Founder at Sanivation™  
[www.sanivation.com](http://www.sanivation.com)  
ME grad 2010 from Georgia Tech

university, I was given many leadership positions and, because I knew how to manage my time, I could help make huge changes around campus. Three summers inspired me to reach for the stars, to realize that anything was possible and I should never settle for less than my best. So, I found a nine-month internship aboard a ship traveling the world where I discovered my passion for social impact on the poorest communities around the world. After four summers of selling books, I also had plenty of money to pay for trips with Engineers Without Borders to design water supply systems in Cameroon, and trips with Living Water to drill water wells in Central America. By my 5<sup>th</sup> summer selling books, I was also running the entire Dynasty organization of about 60 college students.

This intense “non-engineering” experience made me such an intriguing graduate that I never applied for a single job but was approached and offered numerous engineering management jobs. While many of my friends were searching for any engineering job, I got to pick and choose from many exciting offers and finally choose to work for Georgia Tech Research Institute as a research engineer for sustainable technology in third world countries. I implemented and evaluated emergency water treatment systems from around the world. I did consultant work for Yellowstone National Park, living there, analyzing renewable technologies and water conservation for them. And I helped design a way of sanitizing human waste using solar power. This last endeavor led me to receive a grant from the Chilean government to move down to Santiago to implement and test my technology. So at 24 years old, I started my own company, lived abroad in Chile, tested my own technology, all for people without any kind of sanitation who make less than \$2 a day. And if that had not fulfilled enough of my dreams, I am now on my way to Kenya to continue the same work on a much larger scale.

Neat, right? And all of my success I can truly trace back to working with Southwestern. There is nothing that has or could have prepared me better for chasing my dreams as an engineer. I use the skills, character and habits I learned with Southwestern every day of my life. Most of my engineering peers who got “engineering” internships or co-ops “in their field” spent most of their summer waiting for their boss to give them more spread sheets to do while living at home and not really making that much money. I wish I could encourage every college student to step out of what is normal, and take on the responsibility, the pressure, the hard work that is required in the Southwestern Advantage Summer Internship because you will be forced to solve problems...a LOT of problems... and THAT is what will make you an engineer.

  
Emily Woods