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Engineering 101-C

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Engineering Knight Report

My preferred concentration of engineering is mechanical engineering, because its opportunities match my interests of computer modeling, physical construction, and design. When I was younger, I enjoyed playing with Legos, constructing tall towers, making Lego stop motion animation movies, and designing Lego robots. Although many other people probably have a similar backstory, I knew that I had a certain knack for building things with my hands. At the age of eight, I won two hundred dollars at a Lego Competition, because I knew how to design and build a castle. Later, I played less with Lego but still found my interests matched with mechanical engineering, as I had fun modeling and recreating game characters in a program called Blender. The thrill of editing three dimensional shapes with simple operations to end up with an identifiable creature or game character was very satisfying and addicting to me. With Legos and computer modeling, I knew that I really wanted to become a mechanical engineer, so that I could use my passion for designing and building real world objects for the greater good of society.

To learn more about mechanical engineering, I met with a mechanical engineer at Knights Engineering night and learned about his current employment at Foam It, the struggles and the successes at Foam It, and his career path. Alex VanderTol, a mechanical engineer currently at Foamit, shared his long list of employers, which included General Motors, Tower

Automotive, and Johnson Controls. Surprisingly, his job at Foam It was a result of being laid off from a bigger company and having a friend who had ties to Foam It. One of the biggest challenges of switching to the company was its smaller size. Foam It, an engineering company employing about thirty workers ranging from mechanical engineers to technical engineers, designs and produces chemical cleaning equipment for commercial and consumer use. As a small company, one of the struggles it faces is that more work must be done by every person, requiring multitasking and a diverse work experience for each person. Furthermore, as their profit is directly affected by their developed product, issues with supplier reliability can cause major financial issues. As a result, Mr. VanderTol, who has specialized in design, spends only a third of his day designing chemical cleaning equipment with solid works. During the rest of his day, he spends time doing random but necessary projects and management of supplies. Even with its challenges, Mr. VanderTol shares that one of the reasons he still finds enjoyment in his new position is that he enjoys the challenge of learning new software with every update, and he enjoys working with good, hardworking people. With such an unusual, unpredictable story of being laid off and working for many different employers, Mr. VanderTol encourages students to expect change and to be prepared for change.

Questions:

1. What lead you to pursue mechanical engineering?
 - a. He explained that his talent for breaking everyday objects, such as a keyholder, showed his ability and interest for understanding how engineered products work.
2. How did you find the opportunity to get a job at FOAM-IT?
 - a. As mentioned earlier, he explains that he got laid off from a bigger name company, and his friend offered him a position at FOAM-IT. He further explains

his reasoning for working in a smaller company. He reasons that with some family health issues and time commitment required at bigger companies, he should take a job where he works only four to five days a week.

3. How well did you feel college prepared you for the job?
 - a. He emphasizes that Calvin College gave him an advantage over other schools, since Calvin gave him the practice and the skills necessary for effective communication, both orally and literally.
 - b. In addition to writing, he thinks that because of his physics courses, he has a better understanding of how objects interact with forces and free body diagrams being just a native language for him.
4. What does your normal day look like?
 - a. He says that about a third of his day is spent designing with solid works software, and the rest of the time is spent managing the supplier and completing random assignments for the company to function.
5. What are common characteristics of good mechanical engineers at your job? What talents do they tend to have?
 - a. He says that the number one skill to have in mechanical engineering is the ability to be resilient. If someone tries to design something, then later realizes by testing a flaw in the design, he or she must learn from his or her mistakes and continue to refine the design. Simply put, “you’re gonna get it wrong bfore you get it right” (Alex VanderTol).
 - b. In addition to being resilient, VanderTol states that one must be able to master long term and short-term planning. For VanderTol, time is everything; the hardest

part of his job is making sure he estimates the time for completing certain tasks correctly, so that he manages his time efficiently.

Besides VanderTol, the engineering Knight exposed me to many different avenues engineers can pursue during their career. For example, even though I originally thought engineers only worked on designing and prototyping mechanical objects, the panelists described a whole range of careers, including electrical and civil engineers. Not only did some of the engineers have different jobs, but most of them explained that engineering requires more than just engineering. The ability to manage other people, to calculate financial data, and to work on a team seemed to be integral parts of the engineering job. In some cases, such as engineering firms which work on finding clients, the work of communicating proposals and settling deals seemed more important than the work on the real-world solution itself. With so many possible paths to take, and with so many tasks demanded at each job, engineering appears to encompass a very diverse and well-rounded work experience.

From VanderTol and from the other presenting engineers, I learned that engineering is an iterative process. According to VanderTol's explanation of the design process and his career path, engineering is an iterative process, starting with a guess or the first design and ending with a refined product. For example, VanderTol's career path shows how he tried different engineering positions at various firms until he finally found one that suit him best. In addition, his experience of always getting a design wrong before getting a design right also demonstrates that cyclic process of trying, testing, refining, and retrying. Other engineers confirmed the engineering process, explaining how the purpose of engineering isn't so much the product as it is the constant improvement of said products.

In conclusion, the engineering Knight gave me the opportunity to learn more about what engineering looks like on a day to day basis, and it gave me encouragement to complete the engineering program. Before attending the engineering Knight, I always thought engineering was just spreadsheets and emails, since that is what my engineering father mostly does all day. However, what I saw from my dad was only civil engineering, restricting my perception of the collection of engineering fields. Fortunately, the Knight night opened my eyes to some of the very interesting and honorable jobs that I could eventually take. If I find I enjoy leading teams, I could specialize in management. If instead I enjoy the work of accounting all financial transactions and financial plans, I could spend more of my time doing that as well. More important than the wide variety I witnessed was the encouragement VanderTol gave to the students. His whole testimony of working at many different companies and getting laid off from one company illustrated his point that change is inevitable, and that to have peace through change requires faith in God. As I struggle in engineering this year, I need to take VanderTol's message to heart and trust that whether engineering is or is not God's plan, God does have a plan.