I worked at GE Transportation during fall term of my Co-op. I was assigned to Building 5, Heavy Fabrication, under Dale Willis as my supervisor. As the name states, my building buys in large pieces of steel as raw product and produces smaller parts. Later on, our products are transported to other buildings in the plant. GE Transportation produces locomotives; heavy fabrication is one of the first procedures to make locomotives.

Some of my major projects are to create manufacturing instructions, create setup sheets, and modernize employee training information. Manufacturing instruction, or MI, is very detailed training documents that are provided for new operators. It assumes no prior knowledge of reader and lists procedures step by step. In comparison to MI, setup sheet assumes prior knowledge from readers and only lists the most important information in order to operate on machines. I also worked on a quality project; to modernize the old website that records employee training information and to move everything onto a new website. For the first two projects, training are provides through share folder. It has work from previous interns and includes relevant information. I read through everything and used some of them as templates to create mine. For the quality project, I have a QTA (Quality Technical Advisor) as mentor and I usually approach him if I have any questions. For the first two projects, I do not have an assigned mentor. Generally, I ask PTA (Process Technical Advisor) of area that I am working on with questions. I also worked on lots of minor projects; they are usually short, not difficult and provided with detailed instructions.

As Operations Research major, I have a career interest in manufacturing engineering. Being in heavy fabrication fits my long term career goal perfectly. During the past four months, I was exposed to experience with shop floor, and had a good grasp on how it would feel like for career path in manufacturing engineering. After this co-op term, I am now more certain that I will go into manufacturing engineering after I graduate from college. Besides professional development, this co-op also made me a more confident person. From the first moment when I walked into this building not knowing much, I am now able to accomplish projects more independently and won’t be overwhelmed by projects like I first did. If I were to go through the same experience again, I would tell myself to put on jeans and steel toe boots on my first day. Also, I wouldn’t bring any formal clothes. Instead, I would bring more t-shirts and jeans. Dressing professionally really did not fit into my building.

Housing was stressful for me because GE doesn’t provide housing for the fall term. I lived with 2 other co-ops from Cornell and our agent is Bauer Property Management. Their apartments locate in the center of downtown Erie, near Gannon University. It is around 3 miles from work. Housing price in Erie is generally low and GE will provide housing stipend for fall term. My recommendation for transportation is to bring a car. There is some public transportation, but it would be much more difficult. Opportunities for social activities are minimal, but the Cornell co-ops and I managed to make some other co-op
Social activities of all sorts could be had. The abundance of schools in Boston makes for a good college environment. There are bars and restaurants, museums, entertainment, athletics, etc. The downside obviously is that it can get pretty easy to burn through your paychecks; Boston isn’t known for being particularly cheap.

**Evaluation**

The best features were the people in the office and the laid back scheduling. The people were always very nice and helpful, and by the end of it all I felt like I fit in pretty well. As for scheduling, there was no time clock to maintain. They trusted you to put in 5 good days a week, but start and end times were up to my discretion. If I needed to leave work early or come in late, I just gave my manager a heads up and would make the time up later.

The worst features were the documentation and the internal bureaucracy. Both of these are inevitable to engineering and working for a huge company like GE. Although I became much more detail-oriented after having to do so much paperwork, it was truly painful at times. The internal system would drive me nuts usually because it would block some process which in turn would hold everything else up. I suppose it’s the inefficiency that bothered me the most.
- Building a variable current source to determine how much current would be required to drive the LED touchscreen to an appropriate brightness
- Building a variable voltage source for the testing of analog-to-digital functions.

I also became involved with some other projects going on within the business. One of the other products underwent a design change which required it to re-pass electromagnetic testing before production of the product could resume. Because our testing team was swamped at the time, I took on some of the workload in the E&M testing. This involved a significant amount of time in the lab at our facility, where I performed conductive, radiation, and electro-static discharge tests. I also took a trip to a third party test site for more thorough radiation testing.

While there was no specific training provided during my work term, I was more or less constantly learning about a wide breadth of things. This includes circuit design, reading and creating good schematics, soldering, data acquisition, laboratory protocol, and testing standards.

Most of my work over the course of the semester was assigned and supervised by a design engineer. I never had any reserves about asking a question with regards to completing an assignment, but he also encouraged individual effort in solving problems given the advice that he offered.

**Assessment of Learning and Development**

My work here fell right in line with the things I've learned at Cornell. Working for a company like GE could translate into opportunities across many disciplines within electrical engineering across, which is a huge reason I chose GE to begin with.

I would say that about 10% of my time was spent applying Cornell ECE curriculum material to a task at hand. As I soon learned, the majority of my effort (and any product engineer’s effort) was spent either in communication with coworkers, other teams within GE (sourcing, testing, mechanical, etc.) or outside companies we do business with to meet our goals.

This has been a very positive experience for my development as a professional. Knowing the ins and outs of engineering in the industry has really helped me to know where to take aim with my education. Personally it has been quite enriching too. It helped to improve my communication skills in a variety of ways.

**Life Out-side of Co-op**

In the suburb of Billerica and the surrounding areas, housing is pretty skim and expensive. But Boston is not more than a 45 minute drive. College housing (comparable in price to Collegetown) is bountiful, the best area probably being around Mission Hill, which is close to Northeastern University.

Public transportation from Boston falls a bit short of Billerica. You can use it to get to work, but it is timely and involves some walking. I would recommend a car for work at this location.
Co-op Work Assignment

Within GE Energy, I was a part of the Measurement and Control business, specifically on the Moisture and Gas team based in Billerica, MA.

My primary project was to aid with the development of the next generation to the PACE series industrial instrumentation device. This product is built into bench-mount or rack-mount chassis, and you can imagine it being used in the control room of an industrial facility to monitor the processes going on within the facility. It integrates temperature, pressure, and oxygen readings from up to 6 different channels into a single touch-screen display. My work on this project included the following:

- Maintaining a bill of materials for the project
- Monte Carlo simulations of the circuitry
  - Each component can take on a range of values within a specified percentage of its desired value, so we need to account for that in our design
- Ordering parts for our prototyping
  - We wanted to test each subsystem as they were developed, so I would work with the sourcing team to acquire the parts and help build the prototypes.
- Aided with the development of a custom ‘intrinsically safe’ DC-DC converter
  - Because we work under the assumption that part of our product will be operating in volatile environments, we need to make that portion of the design intrinsically safe, meaning that no single component will see power that could cause it to short or blow out.
  - I also performed environmental testing on this device, collecting data about its operation over a range of temperatures over a long period of time. During this test, I discovered that ‘thermal runaway’ posed a risk to correct operation. The IS requirements cause the device to give off a lot of heat during operation. If the components on the board that bear the brunt of this do not have the proper heat sinking, the device would fail.
- Design of the primary DC supply to the module. The driving requirements of the design are to a) filter out unwanted noise from the power line and b) protect the rest of the system from overcurrent and overvoltage situations. I learned a lot about how to fix this common problem in ECE with use of pi filters, varistors, decoupling capacitors, and transient voltage suppression diodes.
- Design of the main fault alarm for the module. If the microprocessor determines that there is a problem with the operation of the device, it sends a signal to this circuit which raises the main fault alarm for the user.
- Design of various circuitries to support development and testing of higher level components of the product.
  - Modeling of a Hall Effect switch within the chassis to determine its effectiveness in the design
During my co-op assignment I worked in the Product Support Engineering department for the CT7/T700 engines. These engines are used on many military and civilian helicopters, including the Blackhawk helicopter line. The role of the department was to ensure the proper functioning of the engines out in the field and to manage any repair work that needed to be done for the customer. As a product support engineering co-op it was my responsibility to keep track of the returns, warranty and concessions and reliability metrics of the engines. These were my day to day activities, however, by the end of the assignment I was fortunate to work on a bigger project regarding improving the power turbine shaft overhaul process.

It took a while for me to start contributing to the group, mainly because there is no formal training program and because it took a while to get set up with the computer and all of the programs that I needed to manually get access to. The people that I worked with were awesome, incredibly nice and very approachable, everybody was willing to help out with any questions I’ve had throughout my assignment. I also had a mentor who worked in my department, whom I came to with some general questions, however, I was never restricted to just his knowledge and usually talked to the other people in the group who had more expertise in certain areas.

My career interests were both to try out an engineering position and learn about business. Since I was placed on a role that deals closely with the business side of the company, I learned more about that than I did engineering. I learned a great deal about how the business operates and what’s going on in the aviation industry. I learned that Engineering out in the real world has a lot to do with dealing with people and that the most successful workers know how to work with others, as you will often need information or help from others and knowing how to help others so that they can help you goes a long way. I learned to work closely with others, how to meet deadlines and how to present information to an
audience of engineers or coworkers. I learned about the intricacies of working at a plant that has manufacturing facilities and unions. If I were to go through the experience again, I would ask for more responsibilities a bit earlier, just because my time wasn’t fully occupied some of the earlier weeks and until I received my big project.

I lived in Danvers, MA and I would recommend against living in Lynn, where the plant is located, as it is not in a good neighborhood. I would get a ride to work from my roommates who also worked at GE Aviation for the term. One could also live in Boston and use public transportation to get to work, although the trip might take an hour each way. There were opportunities for social activities and a few co-ops participated in them, we would go out to dinner or hang out at each other’s places some weekends. GE Aviation also offered a lot of ways for employees to volunteer and give back to the community, I would recommend looking into the tutoring that some of the employees do at the local school early in your assignment if you would be interested in that sort of thing. Some co-ops also played sports outside while it was still warm, that’s also an option for some.

In conclusion I had a generally pleasant experience at my co-op with GE Aviation, the people were wonderful and were probably the best part of my experience. My lack of technical work was slightly disappointing at first, but I learned a lot about the business side instead, which satisfied me. If you are looking for technical work in your assignment, try to talk to the HR people and ask them to place you within the engineering or testing departments. Best of luck and have fun if you choose GE!
friends. Also, there is Millcreek Mall here that I sometimes visit. There were many opportunities for community service through GE.

The best feature of the job is that my work is very interesting and I learned a lot during the past four months. The worst feature of the job is that life outside of work can be boring.
Jessica Chu

NetID: yc499

Major: Operations Research and Information Engineering

Employer: GE Energy Storage

Term: Summer 2012 (2nd term)

I am currently a summer intern at GE Energy Storage and this is my second term working for GE. Technical function of my working group is sourcing or procurement. I work on the indirect sourcing team so we generally deal with internal requests and products that don’t ship to customers directly.

GE Energy Storage is a start-up business so I was given a lot responsibility. My major projects have been tool vending machines, office pantry supplies, and to initiate contract for catering and food line. For all three projects, I met with requesters, or my internal customers, to understand their needs and expectation. Then, I reached out to vendors to see what their recommendations would be for GE. After gathering enough information, I drafted Scope of Work (SOW) and Request for Quotation (RFQ) and issued out to vendors to ask for quotes. Then I analyzed quotes and met with my team again to select final vendor.

As GE Energy Storage is a start-up, lots of things are not established yet and everyone learns along the way. Therefore, training and orientation are limited, especially for my role. In indirect sourcing, it is entirely project based. Although the general approach is similar, every project is unique and requires lots of learning on the spot. However, I was fortunate enough to have an amazing mentor and she gave me all the support and help I needed. We also have weekly meeting with indirect sourcing leaders from other GE business so I get support from them as well.

Sourcing is an important part of manufacturing, and I learned manufacturing theories as an OR at Cornell. I plan to pursue a career in manufacturing, thus this internship fits well into my career interest. Professional culture is completely different; it’s more about how to establish and work the connections you have. After this internship, I am more certain that I want to go into industry right after college and more certain about a career in manufacturing. Also, during this internship, I learned to step up when my team needs me and be credible to others by delivering any action items I promised. I am more mature comparing to when I first stepped into my role. If I were to go through the same experience again, I would find a time to figure out a timeline for all my projects to avoid any of them dragging on.

I live 30 minutes away from where work so I commute every day. But a lot interns live in an apartment on 100 Union Drive, Albany NY. I heard positive feedback about that place so it’s something to consider if future interns need housing here. For transportation, you definitely need a car because Albany is suburb. During free time, I recommend Crossgates Mall and Colonie Center. They are the two biggest malls around here. Also, within an hour drive, there is Great Escape amusement park, Six Flag, Saratoga Horse Race during the summer, Lake George, etc. GE offers lots of community service opportunities. We also have softball game one per week after work.
Best feature of being in sourcing is to get to establish relationship with both requesters and vendors. Being in sourcing, there is a lot of paperwork, but there is also lots of communication. I work with requesters and vendors on a daily basis and I learn something new every day. Worst feature about this job is when people don’t get work done by the date they promised to. There are lots of follow-ups in sourcing.

Working for GE is great, and if future interns have the opportunity to come to GE Energy Storage, they should do so. This is a brand new GE business (we just had our Grand Opening on July 10, 2012) and there are lots of career opportunities.
Tom Hirschfeld, Chemical Engineer

Fall 2011 @ General Electric Energy: Bently Nevada

Tier 1 Technical Support Specialist

Tmh79

Working Assignment:

I was a technical support specialist. I take calls and answer emails from our customers and field engineers. About a third of the cases that I worked were simple things like clarifying things in the manual to a customer, or helping a fix a known error. Most of these cases lasted less than a few hours and required few correspondences. The other two thirds of the cases that I handled were fairly extensive. For example, customers with system1 software problems often required extensive troubleshooting and most cases involving system1 lasted more than a week. On site, we have a “lab” with all of the products that we sell. When we came across an unknown issue, we would replicate in our office with our products, and then try to solve the problem. Sometimes this was easy and fast, and sometimes this took up to a week. Outside of “working cases” I configured a System1 enterprise consisting of many of our products for a product demonstration center that is currently being built. I would spend the time before lunch taking calls, and the time after lunch working on the System1 enterprise. Most of the “training” I had was on the job training, which worked very well in this role. The training I had consisted mostly of me learning where to do my research and effective ways to troubleshoot. As I became more experienced, research became easier, and I could answer many of the customers’ questions without extensive research.

Assessment of Learning Outcomes:

This job is tangentially related to my career interests. I would like to become a field engineer. In this role, I worked with a number of field engineers and helped them troubleshoot their problems. Near the end of the term, I had lunch with the field engineering manager for the Bently Nevada Western Region and he offered me a tentative internship in the company this summer, pending HR approval. The knowledge I have about our products will be very valuable in the future if I work as a field engineer for Bently Nevada. Another thing that I learned was how many different “applications” of engineering there are. At Bently, if someone has a question, and they don’t know who to ask, they ask tech support, and we direct them to the right working group. Out of necessity, we are very well connected with almost every working group at Bently. Before I worked here, I didn’t know how big departments like “hazardous area approvals”, “SIL”, and “Sustaining Engineering” could be. There is much more to engineering than just design, and I feel like as students, we lose sight of that. This position has not really affected my “personal development” or how I work with others. I’ve been working since I was 15, I love being productive. Basically, I have experience with less agreeable people at worse jobs, so this job was easy as far as “learning about myself” went. Additionally, I love working in a team. Because of these things, this job was a good fit, but it wasn’t challenging or “developing” my interpersonal skills. I wouldn’t change anything if I were to do this again; I feel like this term went very well.
Life outside Coop:

Bently Nevada is about 20 minutes from South Lake Tahoe, CA. I lived in south lake, and had a great time with my friends that I met there. I found the best way to find a room was on the “craigslist” room shares board where people rent a room for pretty cheap. This was useful because if you live with people you like, you already have a few friends. The room share search was probably one of the most interesting cultural experiences I had out here. One of the first groups of people I met was an artist colony gearing up for burning man. They had a large satellite dish behind their house filled with futon pads, and they were meditating together in it when I came by. Another guy lived in a gross (IE filled with trash) three bedroom house. When he showed me the bedrooms, he showed me his room, my potential room, and his “special room” where he had some “420 goin’ on in there, but it’s totally cool, because were in Cali, and its legal here”. Eventually, I found a place to stay and a good group of friends. A car is necessary. There are entire books written around fun things to do in Tahoe, so I won’t detail this too much. I spent most of my time rock climbing in Yosemite, or skiing at Heavenly, which is just across the street from my house. There are plenty of restaurants and bars in town, and the casinos on the Nevada side have amazing deals on Friday night (No cover, free drinks for ladies, etc). I suggest living on the Nevada side of the lake because you will avoid the CA income tax which is pretty high. One thing that was nice is that GE has a program to introduce the interns to the EEDP program participants (essentially they are master’s degree interns). I made good friends with the other intern and the EEDP people in Minden.

Evaluation:

The best part of this job was the lifestyle. I love the mountains, skiing, and rock climbing. Bently is probably the closest salaried job you could find to the Eastern Sierras/Yosemite. The mountains are about a 10 minute drive from the office, and I was able to live in Tahoe with a half hour commute. Yosemite National park is about an hour and a half away too. Most teams here are very flexible with schedules; if you want, you can start at 6 and leave at 2:30, or you can start at Noon and leave at nine. Most people take an hour for lunch, but you can take 30 minutes and leave early if you want. The worst part about this job was the lack of math/chemical engineering knowledge required. The job was intellectually challenging, but not in a way that would allow me to apply anything that I learned in school. There was no thermodynamics, no mass balances, nothing like that. This was the only disappointment. Having an engineering degree is a ticket into a technical job, not necessarily an engineering job, and unless you are designing something, what type of engineering degree you have doesn’t matter very much. At the end of the day though, I would rather do general technical stuff in Lake Tahoe, than reactor design in New Jersey and I don’t regret my decision to come out here at all.

Additional Info:

Bently is always looking for more interns. You need to apply through the GE energy EID program, but when you select your job from the possible options, there will be a lot of options at Bently. Additionally for all GE EID coops, it is pretty much imperative that you find a manager to work for, or a role you would like to be in during your fall term if you want to do a summer term. They changed the process of reapplying this year to the EID program so you have to formally reapply. Unfortunately, you are
reapplying after they have done all of their autumn on campus recruiting so the EID program is full by the time your internship ends and you reapply. Due to the unfortunate situation in GE HR, you may not be offered a return position even if you have good scores in your appraisal because there simply aren’t positions for you. I don’t know how difficult it is to get a return offer, and I got really good scores on my appraisal, so we will see. My frustration right now lies in the fact that I have a current manager that really enjoyed me and gave me high marks, a new manager here that wants to hire me for the summer, and an HR department that is dragging their feet on rehiring me for some reasons I don’t fully understand. I feel somewhat “screwed” by the situation because all of the “good” companies recruit for summer internships during the fall, when you are gone on co-op. I applied to about 5 internships at oil companies and didn’t hear back from any of them. I suspect this is partly because they do the vast majority of their recruiting for interns through on campus recruiting which I did not have access to, and also partly because I applied in late October, which is pretty late in the fall recruiting season. So, here is the take away lesson: if you work for GE, spend September and October looking for summer employment at other companies.
Tom Hirschfeld
Tmh79
General Electric Energy
Manufacturing internship

A) Coop Work Assignment

I worked on the manufacturing floor of a general electric facility that produces instrument transformers. My work was project based, and consisted of making three improvements in the manufacturing line. My first project was reducing the amount of rubber scrap we produced. My second project was designing a copper jumper for use in a transformer. My third project was implementing a process to bring a new name plate etching laser into production.

B) Assessment of learning development.

During this summer, I experienced the job of a manufacturing engineer. In this role, I realized that I want to work as an engineer for an oil and gas company. I feel like my technical skills were underutilized in this role. In the future, I will look for a more technical role, most likely in the oil and gas industry.

C) Life outside of Coop

I had a summer sublet in Durham, NH which was about 20 minutes away. The housing wasn’t bad, but I wouldn’t recommend it. I was the only intern for much of the summer, and I didn’t meet many people. I spent most of my weekends rock climbing with friends from school.

D) Best/worst

The best features of this job were the quick paced work atmosphere, the ability to immediately affect the manufacturing line, and the ownership of the projects I had. The worst features of the job were the lack of a social life, the lack of air conditioning, and the lack of deep technical skills.

E) Additional information

Air conditioning is a really nice thing. Also, while working on the manufacturing floor was really neat and hands on, it was also loud, hot, and dirty.
The group I worked with at GE Energy was the Industrial Services team for the Northwest part of the U.S. Our group provides power system services for industrial customers. Services include: power system studies, onsite testing, onsite maintenance, equipment training and sales of GE power equipment. Our team constantly interacts with customers as we are responsible for the design, service, maintenance and sale of their power systems.

The major projects I was involved with were power system studies, field work and business optimization related tasks. I had the chance to travel to several customers and shadow engineers onsite. Since our group is not extremely large, all training was provided one on one with an engineer or manager. This allowed for a unique learning experience. I did not have an ‘assigned’ mentor, but there was an engineer I worked several projects with who I constantly went to with questions. He is a power systems engineer with a degree in EE and a graduate degree in power systems. Since we have similar formal academic training, he was able to be of great assistance to me while on the job. Also, I worked closely with an engineer that has been working for GE for 41 years. Through his years, he has obtained unparalleled wisdom and knowledge for the industry.

I was able to excel in our unique fast paced group due to my past professional experiences, not any experiences in academia. Power systems was a new subject for me, but it was easy to pick up having solid background in circuit theory. EE is the right major for the position I had, but power systems are seldom the focus of EE programs these days because they are not an area of cutting edge research. I am interested in the Energy field, so this was good exposure.

I have already had several internships and research experiences so the professional world was not completely new. I continued challenging myself and being responsible just as I have in past experiences. I continue to do well interacting with different types of people. I attribute this to interpersonal skills I have learned since a kid, not to any professional experience.

The Portland area is a fun place. There are a lot to do outdoors and the city is unique. Finding housing was not a problem for me, there were plenty of online resources. I recommend driving here, regardless of where you are coming from. You are going to want a car so you can visit the mountains and beaches. Most social activities are found in the city: pubs, breweries, concerts, Saturday markets and sports games. No opportunities were given for community service or athletics, but I found my own opportunities.
The best feature of this job was the variation day to day. One day I might be designing a power system, the next I could be at a wind farm. It was fast paced, I like that. Features that I didn’t like were that it seldom challenged my academic skills learned at Cornell. I was not completely expecting that to happen though. In a survey of Cornell Engineering Alumni it was reported that Cornell over prepares students with unnecessary theoretical training. Also according to the Alumni, the business and professional training provided by Cornell was insufficient. Although not as intellectually stimulating as I would have hoped, the business and industry exposure I gained during this employment was fantastic.
Johnny Lange  
wjl52  
Chemical Engineering  
GE Transportation  
Fall 2011

Job Summary

A. Co-op Work Assignment

"GE Transportation is a global technology leader and supplier to the railroad, marine, drilling, wind and mining industries. GE provides freight and passenger locomotives, railway signaling and communications systems, information technology solutions, marine engines, motorized drive systems for mining trucks and drills, high-quality replacement parts and value added services." While this was taken straight from the GE Transportation website, it still gives an accurate depiction of the wide range of services this business has to offer. I was fortunate enough to be involved with the Remanufacturing team in the Global Services Operation, which was responsible for fulfilling international service contracts, most notably in Kazakhstan. This entailed establishing working remanufacturing sites in country, saving a lot of money that would have been spent to send locomotive parts back to the US for repair. This not only benefited our business by cutting costs, but also allows the customer to get back on track (pun intended) sooner. I worked directly for Jim Holtgrefe, who is the Remanufacturing Project Management Leader, and he is responsible for establishing and assessing many international sites for local remanufacture.

My main duties were to work with another Co-op in Grove City, PA in making sure that items that the Kazakhstan team needed were sent there in a timely manner. This entailed moving shipments around the Erie plant so that they got to the proper sites for export. I also assisted in researching the tools that were needed using component drawings and making sure these tools were ordered and sent. I provided some documentation on some processes that will be used in the future to localize the remanufacture of a particular component.

Since my assignment leader spent a lot of time in Kazakhstan during my rotation, I did a lot with other groups that needed additional assistance. The areas for these groups directly impacted the international remanufacturing team, so this wasn’t an altogether separate assignment. For this, I mostly assisted in developing processes that will help make future international transactions go more smoothly and efficiently. I assumed the lead on one project in order to lessen the process owner’s already full plate, allowing me to see firsthand what it takes to implement a new process and also how many different aspects of the business are involved in a single operation.

Not much training was provided, nor was it really necessary to get started in this co-op. I found that I learned more by doing and interacting than from the basic training modules that I did. The modules that I did provided a background on diesel locomotives and this was helpful in understanding what exactly I was dealing with. Since I was in a services role, I had very little direct contact with the product that the entire business was focused on. My assignment was a little different in that my mentor was out of the country for my first two weeks, so I had to find other people to answer the questions that I did have (at least at the
beginning). From my experience, everyone was more than happy to help me out and explain certain processes to me. The only problem was finding the right person to ask!

B. Assessment of Learning and Development

As a chemical engineering major, I did not have much direct knowledge that applied to this position. This in no way inhibited my ability to operate; it was just an inconvenience that I couldn’t put my hard work in school into practice. I was able to use some thermodynamics information to understand the diesel engine, but this was mostly an extra benefit as my work did not directly need technical knowledge.

This position gave me a deeper understanding of how a large business like GE is run and how interdependent many of the operations are within the organization. The international flavor that I got was also very beneficial in that I got to see how much additional work it takes to move things around the world, and also to coordinate meetings with people who are abroad.

Prior to this co-op, I had some trouble getting myself out of my comfort zone and approaching people I did not know to ask them questions or get feedback. This co-op not only forced me to do this, but it made me a believer in why it must be done. I am now more comfortable picking up the phone and calling people that I do not know and asking them questions.

I feel that I am now more aware of my time management skills in that the practice that I got from performing school assignments was directly applicable to work assignments. I am also more aware of my comfort with talking to superiors and co-workers, even those that are many years my senior. I think that this skill is important for both the work environment and everyday life because it allows me to not feel intimidated in conversations, which allows me to speak my mind while still giving people the respect that they deserve.

If I could do anything differently I would force myself to get out of my comfort zone sooner. This would have made things easier early on and could have improved my overall experience.

C. Life Outside of Co-op

Our HR coordinator gave us a list of housing options that previous co-ops had used, which was kind of helpful. We didn’t end up using any of their suggestions, but it definitely gave us an idea of what was available. It was hard for us (myself and the two other co-ops from Cornell) to find places online that we could rent. One of my roommates ended up driving through Erie after summer session and found a place while in the city. There are a few colleges in the area so it wasn’t hard to find a place that did short term leases, and we were fortunate enough to find a realtor that could let us rent for only the four months we would be on co-op.

There is no convenient public transportation in Erie, so having a car is a must. I had my own car and my two other roommates used a car that one of them had to get to work. I worked at a separate location from them so it was a good thing we had two cars. I’m not sure if there is much housing within walking distance from the plant, so having a car is very important.

There is not much to do in Erie in the fall, so it is important to find a hobby or something you like to do. The plant has a fitness center that is free if you go a certain number of times, so that was one way to kill time. The weather in Erie is similar to Ithaca in that when the weather goes bad, things get very dreary. The nightlife isn’t very exciting in Erie, but we did meet some co-ops from Lehigh that we would hang out with sometimes to watch football with. GE didn’t do
much to facilitate co-op bonding so we only met these people the first day as we were waiting for all of the administrative things to be done.

There were a few opportunities that we were made aware of for community service. It seemed like they were always conflicting when we made plans to visit Cornell for the weekend, so I never got the chance to participate in one. As I said above, there is a fitness center at the plant that has treadmills, weights, and whatever else it is that gyms usually have. I think they offered group fitness classes too, but I never did any.

D. Evaluation

The best features of this job were the independence and exposure to many different aspects of the business. I had not expected to get such an international experience from working here but I feel it is going to be one of the major things that I take away from this experience. Being able to work directly with people from another part of the business was also a major benefit because it showed me that engineering is not the only subject of interest in a company of this size, nor is it the most important. While I wasn’t able to apply much of my engineering background, getting the feel of a large business was something that I couldn’t have gotten many places and it definitely sets a good foundation for anything I will do in the future.
This semester, my co-op put me in the bearings and lube group within the Component Test Lab at GE Aviation. The group’s main responsibility is to run tests on problematic engine parts sent in by the other groups in the company. These past few months, I’ve been able to help out on a variety of tests, including a seal leakage test, an engine endurance test, and a vibration analysis test. My role in these tests can be as little as observing and learning test procedures, or as much as actually running the test myself. There was very little in the way of formal training for my assignments—I was simply learning by doing. There were, however, plenty of people to help me with any questions, including my manager, the bearings and lube group leader, and just about anyone else within the Component Test Lab.

I did not, of course, have the opportunity to apply knowledge gained in my quantum physics courses to any of my tests. Engines and aviation as a whole do not really fit in with most of the AEP curriculum (so far), but I pursued this co-op because I thought I might be interested in going into some form of aeronautical engineering in grad school or beyond. In my case, I discovered that this is not quite where I want to go with my life, and has made me change gears in order to pursue biomedical engineering instead. In terms of professional growth, I have gained a great deal of experience in interacting with colleagues—both inside my group and out. I’ve also learned how to take initiative when seeking new project assignments, and how to properly conduct myself in a professional setting.
In terms of housing, I had it pretty easy, as my father lives about half an hour from where I work, so I’ve just been living with him. For potential co-ops, however, GE Aviation provides a website where all of the co-ops can connect to each other, allowing them to find housemates, and they also provide links to landlords and other housing options in the area. For transportation, having a car is always nice, but not necessary to work here. There is a commuter rail stop within the plant, and the T provides easy transportation throughout Boston’s suburbs.

There are opportunities for community service and athletics, as well as fun events provided by GE Aviation. An on-site gym costs only $4/week, and there are free weekly activities such as after-lunch ultimate Frisbee, and after-work soccer. Community service opportunities with Habitat for Humanity and My Brother’s Table are encouraged on weekends. The co-ops receive funding to organize fun events, such as bowling and weekend skiing trips.

Overall, the worst part of this job was that the amount of work could be a little unpredictable, so that some days were spent mostly at my desk, while others were spent completely down in the lab. The best part, on the other hand, has been that it’s a great learning experience. By working in the Component Test Lab, I’ve had the opportunity to see many different parts of different kinds of engines, and to learn about all of them, rather than being focused on just one part of one engine. For someone interested in pursuing a career in aviation, I feel this would be an excellent foundation to build upon. For me, it was a good way to learn that I’d like to do something else, rather than continuing to pursue this as a career. Also, GE does not offer a two-term co-op (fall and summer, for example) right off the bat, but it’s very easy to apply for the second rotation. Best of all, for me, is that the second rotation does not need to be in the same division—I’ll be working at GE Healthcare next summer.
Job Summary

This summer, I spent twelve weeks working on the dose reduction team, part of the CT Systems division of GE Healthcare. As the name suggests, the team’s function is to reduce the amount of radiation to which the patient is exposed during a CT scan. The difficulty in this regard is in maintaining the same image quality at lower doses. One of the members of the team was assigned as my mentor and project leader for the summer, and it was to him that I reported. He assigned me three main projects to complete during my time here, all with obvious benefits to the dose team. Without going into detail about the projects, each required a balance of hands-on work, using the CT scanners, and data analysis in Matlab and Microsoft Excel. A single day of orientation (to GE Healthcare, not my specific job) was provided at the beginning of the summer. My mentor provided readings to bring me up to speed on the work I would do, but most training took place in the CT scanning bays.

As an Applied and Engineering Physics major, with a minor in Biomedical Engineering, my work this summer was quite relevant to my studies and career interests. The theory of CT scanners is based on x-ray physics, and their application to biomedicine is obvious. While I found the work to be quite interesting, I was also struck by the realization that I don’t want to spend my life sitting at a desk, making me decide to go to medical school, which I had been considering anyway. I believe this is part of the importance of internships—it’s not just about getting experience, it’s about figuring out how that experience will fit into your career. Last fall I had a bad experience with GE Aviation—I didn’t consider this a failure, but rather a lesson: clearly a career with aircraft engines was not in my future. Personally, this internship helped me learn about taking initiative and responsibility. I’ve always wondered how a job like this works—who tells you what to do on a daily basis? Working at GE Healthcare made me realize there isn’t someone to do that—you determine what your overall goals are, then work towards them every day, with guidance, perhaps, but not instruction. This job also made me more comfortable working with other people—particularly my superiors.

Students on their first rotation with GE Healthcare will almost certainly be required to work in the Milwaukee area. There are four sites in the area—two in Milwaukee, one in the suburb of Wauwatosa, and the headquarters in Waukesha. All four sites are within about a forty minute drive of each other. A few months before my start date, the co-op coordinator at GE Healthcare sent out an
email to all prospective interns detailing housing opportunities in the area. Most of these are some form of summer housing on the university campuses in Milwaukee. While expensive, these are ideal in terms of ease, as they are located in the city and will be where most of the interns choose to live. Personally, I wanted something cheaper, and did my own search for housing. Using Craigslist, I found many other opportunities, both within Milwaukee and in the suburbs—prices in the suburbs are about $200/month cheaper on average, but with the disadvantage that few other interns will choose to live outside of the city. Careful planning will allow a student to live in the city and walk or bike to work if placed at one of the Milwaukee sites; otherwise, a car is a must for transportation.

GE Healthcare hires approximately 200 summer interns to the Milwaukee area, providing plenty of people to partake in social activities. It was not uncommon for weekly activities to be planned through the company’s Outlook email client, including picnics, beach days, and even bar crawls for over-21 interns. The company also encourages community service, offering interns the chance to join a community service group when they start working. This group provided multiple volunteerism opportunities, including at local charity walks and blood drives. Working at GE Healthcare includes the benefit of free gym access. Pickup soccer and soft ball games were available a few times a week after work, and were also scheduled through Outlook. Additionally, during the Olympics, GE Healthcare hosted a ping pong competition that all were welcome to participate in.

Overall, working at GE Healthcare has been an excellent experience. The best part of the job was coming to work every day knowing that my projects were making an impact on the company as a whole, and were not just busy work. The worst part was the location—I was raised in Massachusetts, so working out in Wisconsin meant being separated from all of my friends and family. Additionally, as a native Bostonian it was hard to get excited about the city of Milwaukee (though a weekend trip down to Chicago was certainly exciting), and I made the bad choice of living outside of the city, making for an even less interesting life outside of work. Still, this just meant I had to make new friends and find new ways to occupy my time, neither of which is ever a bad thing, and the experience as a whole only lasted 12 weeks. Besides, having a company like GE Healthcare on your resume before you even graduate is a major plus, whether your plans involve grad school or going right to work.
When I first drove past the gates of the Lynn GE Aviation facility, I was honestly quite astonished at how massive the site was: countless buildings and thousands of employees. During this first rotation, I was assigned to work in Supply Chain for Lynn Assembly, Test, and Overhaul (ATO) under Bob Loycano and Sue Carroll.

Working in ATO, I was able to get a diverse range of tasks, responsibilities, and larger projects to take on. Because I was fortunate enough to have such a wide range of projects in not just my building, but in several other buildings across the site; I was able to gain a very well-rounded co-op experience, collaborating with a diverse group of people and viewing many different perspectives.

In the building I worked, the T700, CT7, and the CF34 engines were being assembled and tested. It was always exciting to walk down the aisles of the assembly floor, and observe how the different modules and sections of the engines are built. One of the tasks I was given was to assist in the completion of a First Article Inspection of an output shaft assembly, where I took several torque measurements and inspected the assembly of an output shaft from start to finish. In addition to this First Article Inspection, I also assisted in a HIRSS (Helicopter Infra-Red Suppression System) Core Investigation project for Plant II. The HIRSS Core is a part of the helicopter where exhaust is removed and noise is reduced. The Investigation consisted of inspecting the HIRSS Cores using certain standards and tests with tools like shims and pre-sized molds. This was just an extraordinary experience, getting up close to the part, learning all the
minute details inside and out as well as the exact process each HIRSS Core must go through and pass in order to be shipped.

Furthermore, I also had the opportunity to take part in the FOD (Foreign Object Damage) Test Cell Inspections. Before engines are tested, the test cells need to be carefully inspected for any loose objects on the walls, ceiling, and floors of the cell to prevent any objects from flying into the engine as the test is running. This gave me the opportunity to see the fully built engines in cells ready to be tested up close and in front. The details of each engine were just exquisite.

Although inspections have been a huge portion of my co-op experience, I have also worked on assignments in regards to Gensuite Training Tracker and Support Central. I have used Gensuite Training Tracker to manage and regulate the trainings of employees in ATO, Plant I, Plant II, Plant IV, and Logistics, constantly in communication with the Quality Leaders regarding updates on trainees. On the other hand, Support Central is General Electric’s IT website system where Quality Leaders can create a Support Central website for each of their plants, allowing for the Quality team to easily share essential data and documents. After learning how to use Support Central during my first week, I was in charge of managing and updating the Support Central sites for the various Quality Leaders.

Through these projects, as well as several others I have not mentioned, I was able to expand my knowledge and grow as an individual contributing as much as I possibly could to the company during my 4 month co-op rotation. I must say everyone was so friendly, helpful, and supportive, especially my assignment leader Sue Carroll, who has played an essential role in making this co-op rotation such a wonderful experience for me. It was definitely a life-changing experience for me that I will never forget.
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Mechanical & Aerospace Engineering
GE-Aviation: Lynn, MA
Summer 2012
Start Date: 5/21/2012
End Date: 8/3/2012

Returning to GE-Aviation Lynn for my second co-op rotation, I have had an extraordinary experience working in the Product Engineering Center. Through these past 11 weeks, I've been given the opportunity to further strengthen my engineering foundation, build a strong network, and grow as a leader and individual.

I was fortunate enough to have been assigned into the engineering department. I've been given projects where I have had to apply concepts that I've learned in classes as well as utilize new engineering software and techniques. I have had countless projects such as assisting continuous improvement program (CIP) owners with data analysis using software like Minitab and Unigraphics and creating a drawing for a change in design (CID). Through each project I have worked with program managers, specialists, lead engineers, and assemblers, learning what it takes to successfully launch a new engine or improve an existing one.

Aside from the intriguingly challenging work experience, GE-Aviation Lynn also has an exciting social aspect. During the summer, there were over 100 other co-op/interns and a plethora of social and professional networking events with opportunities to play a different sport each day with coworkers and manager luncheons at least once each month.
The K-Clip: Fall Co-Op Review

During my fall rotation I worked on the GE38 program at GE Aviation in Lynn, MA. Before I began my rotation I received an e-mail containing my position description. The description read as follows: "Support multiple international and commercial Turboshaft programs. Assist program managers to successfully execute customer deliverables. Work with various internal organizations including engineering, supply chain, and sourcing as well as with GE customers." When I first read this description, I had absolutely no idea what to expect when I started work.

Not too surprisingly, the first couple of weeks consisted mainly of setting up my computer, adjusting to the flow of the office, and attempting to remember the loads of information being given to me from tours, introductions, and meetings in which I had no idea what was going on. To top it off, everyone spoke in a language of acronyms that one would only be able to follow if they had worked there for years, let alone two weeks. This was when I first learned that once you get an engineer talking about what they do, they suddenly light up and attempt to fill you with every bit of knowledge they have. Needless to say I was having the time of my life hopelessly attempting to remember everything I was told about the GE38 engine.

It wasn’t until my third week that I received my first real project. I was simply asked if I was interested in doing some “light carpentry.” Jumping at any chance I had to get hands on and do some design work, I immediately accepted. The assignment was to build a crate to store flight test engines before they get shipped off. The assignment seemed relatively simple and gave me a good introduction into the process of getting products manufactured and learning about drawings and specs. Although this project wasn’t too design intensive it was an incredible learning experience on how to work with manufacturers and clearly communicate what you need to have made. I learned early on the importance of “Murphy proofing” any design and that “the squeaky wheel gets the grease” (simply put, be persistent). Two lessons that proved to be invaluable during my entire rotation.

Once this project was under way, I got my second and debatably most significant assignment of my rotation. The assignment was to design an imbalance clip for the stage 5 blade of the power turbine module. The imbalance clip would be used to position a known amount of imbalance in the engine for a development test (High Cycle Fatigue Stairstep Test). Clip designs in this area of the engine have been used before on earlier engine lines so the initial intent was to leverage a design that had worked in the past. Soon after designing and analyzing a clip similar to the leveraged design, it was evident that the stresses would far exceed the material properties and the design would not work. After a couple of design iterations, a new a feasible clip design began to take form.

Because GE works with a German company, MTU, on the power turbine module, the engineers from MTU were closely involved during this process. We had weekly tech review meetings where we would discuss my designs and analysis of the clip and any changes I thought were necessary. Working with engineers from a different country turned out to be a much greater learning experience than I had expected. Not only did I have to clearly communicate my analysis and calculations, but I had to speak slowly and clearly enough for the engineers from MTU to understand. By this time in my rotation, I had already begun to speak in acronyms, and to top it off, I speak so quickly that people who are fluent in English often have to ask me to slow down. Adding nerves to the equation, I’m genuinely surprised that the MTU engineers got anything productive from my first couple of presentations. After getting the opportunity to speak one-on-one with the MTU engineers, I was able to develop my communication skills
so that I was able to work more efficiently with the MTU engineers. Beyond just trying to communicate to the engineers from MTU, I was able to focus on presenting my analysis as clearly and concisely as possible. This greatly helped me improve my presentations to become more focused and informative. Working with MTU also proved to be helpful because they were able to run the model simulations and computer stress analysis that I, as a co-op, did not have the knowledge or resources to run.

Beyond just the design and analysis, I was also able to oversee the manufacturing of all the clip prototypes. By the end of my co-op, I had made so many iterations, that I was very well known by the people I like to call the “Clip Trifecta”. This included Tim from punch-press, who helped me acquire the all sheet stock I could ever need, AI, who ran the water jet machine and was always willing to help me cut out whatever design I sent his way, and Tim from Tool andDie who would mold the clips to the blade from just a blank cut-out and a 3D sketch I gave him. All of these GE employees were clearly experts in their field and were able to provide me with insight into the manufacturing process so that I could make a clip that would not only hold up to the stresses, but would be easy to assemble; a critical and necessary function of the clip.

After much time and devotion, the clip became known as the “K”-clip and everyone I worked with knew about it. By the final clip design, I could easily say that everyone in my office had either directly given me advice or had some part in helping me design the clip. So, when it came time to begin the HCF Stairstep test, everyone in the office was looking forward to seeing the k-clip work. The same clip that was initially supposed to be so simple but had turned into a 2+ month project.

This brings me to November 13th, 2011. 8 am. Test Cell #2. I was given honors of putting on the first k-clip (mass: .95g). The engineers had marked which blade the clip was going to go on in order to provide the correct imbalance and all I had to do was install the clip. However, unlike my numerous test trials, there was now an exhaust frame in the way, and if I dropped the clip in the PT module, there was no getting it out and I essentially ruined the entire test. I honestly can’t tell you if it was excitement, nervousness, or pure fear, but I swore I was going to throw up, or worse, drop the clip.

With the help of a screwdriver and some maneuvering, the clip went on just as expected and I was allowed to watch the test from the control room. There was a camera on the engine and for the next two hours of my life, my eyes did not move. I guess I expected to see sparks and an explosion at any point, but it never came. It was reassuringly uneventful.

After that day, the testing continued on and continued through the end of my co-op. I had numerous other assignments after the clip that taught me more about the GE38 turboshaft engine than I could have ever hoped for, but none of them compared to the feeling of watching something you design go on an engine and work. I never in my wildest dreams thought I would experience anything like this during my co-op rotation and I don’t think it would have been possible without the group of people I had the opportunity to work with. Looking back on the position description that I received before my rotation began, all I can say is that this co-op exceeded my expectations in every single way and I cannot wait until I begin my second rotation in the summer.
During my summer rotation with GE Aviation, I was placed in the role of a project engineer for the CT7-2F1 engine line. This role was a more management based role rather than the technical role I had in the fall. This was largely due to the fact that there were 160 interns/co-ops at GE in the summer as compared to the 50 that were present during my fall rotation. Because of this increase in interns, most students did not get their top choice in position. Although I was hesitant at first as to how much my educational background could help in this role, I ended up getting more technical expertise out of this rotation than I ever thought possible.

The three main projects that I worked on were heavily based on the project management role that I was placed in, however there was a lot of technical knowledge that had to be learned and understood to accomplish them. My biggest project was mapping out and scheduling the conversion plan of a CT7-2E1 engine into a CT7-F1 engine. The goal of the program was to utilize 6 2E1 engines and convert them into 2F1 engines to save the company the cost of having to purchase new hardware. My role was to contact people from the different departments to figure out what had to be done to make this a possibility. These departments included quality, engineering, instrumentation, manufacturing, and project. Once I was able to consolidate the needs of each department, I could plan out what had to be done to the engine and when once it came into the GE plant in Lynn. I was also able to draft up all the forms that had to be submitted and obtain all the necessary approvals.

This project gave me a significant insight into how the engine works and all the different parts and components that make up a jet engine. Some of the actions that had to be taken were
During my co-op assignment I worked in the Product Support Engineering department for the CT7/T700 engines. These engines are used on many military and civilian helicopters, including the Blackhawk helicopter line. The role of the department was to ensure the proper functioning of the engines out in the field and to manage any repair work that needed to be done for the customer. As a product support engineering co-op it was my responsibility to keep track of the returns, warranty and concessions and reliability metrics of the engines. These were my day to day activities, however, by the end of the assignment I was fortunate to work on a bigger project regarding improving the power turbine shaft overhaul process.

It took a while for me to start contributing to the group, mainly because there is no formal training program and because it took a while to get set up with the computer and all of the programs that I needed to manually get access to. The people that I worked with were awesome, incredibly nice and very approachable, everybody was willing to help out with any questions I’ve had throughout my assignment. I also had a mentor who worked in my department, whom I came to with some general questions, however, I was never restricted to just his knowledge and usually talked to the other people in the group who had more expertise in certain areas.

My career interests were both to try out an engineering position and learn about business. Since I was placed on a role that deals closely with the business side of the company, I learned more about that than I did engineering. I learned a great deal about how the business operates and what’s going on in the aviation industry. I learned that Engineering out in the real world has a lot to do with dealing with people and that the most successful workers know how to work with others, as you will often need information or help from others and knowing how to help others so that they can help you goes a long way. I learned to work closely with others, how to meet deadlines and how to present information to an
audience of engineers or coworkers. I learned about the intricacies of working at a plant that has manufacturing facilities and unions. If I were to go through the experience again, I would ask for more responsibilities a bit earlier, just because my time wasn’t fully occupied some of the earlier weeks and until I received my big project.

I lived in Danvers, MA and I would recommend against living in Lynn, where the plant is located, as it is not in a good neighborhood. I would get a ride to work from my roommates who also worked at GE Aviation for the term. One could also live in Boston and use public transportation to get to work, although the trip might take an hour each way. There were opportunities for social activities and a few co-ops participated in them, we would go out to dinner or hang out at each other’s places some weekends. GE Aviation also offered a lot of ways for employees to volunteer and give back to the community, I would recommend looking into the tutoring that some of the employees do at the local school early in your assignment if you would be interested in that sort of thing. Some co-ops also played sports outside while it was still warm, that’s also an option for some.

In conclusion I had a generally pleasant experience at my co-op with GE Aviation, the people were wonderful and were probably the best part of my experience. My lack of technical work was slightly disappointing at first, but I learned a lot about the business side instead, which satisfied me. If you are looking for technical work in your assignment, try to talk to the HR people and ask them to place you within the engineering or testing departments. Best of luck and have fun if you choose GE!
Fall 2011 GE Job Summary

My job at General Electric (GE) Energy was much different than the typical technical engineering role. I decided to apply for a role in the GE Energy sourcing department, whose role was to buy goods and services for GE Energy. In particular, I worked under a Global Commodity Leader who dealt with buying over $250 million of goods/products for GE Energy on a global level.

Naturally, a job like this is not as heavily dependent on technical skills as a traditional engineering job may be. Instead, I had to focus on building my skills in communication and organization. Unfortunately, there was no training or orientation period that helped me right at the beginning of my work term. Instead, I was given an assignment leader who served as my mentor and provided me real-time feedback on the work I was doing. An important thing to note is that, in the beginning, I had to actively seek out projects that would help my assignment leader gain confidence in my abilities to complete assignments quickly and accurately. Only after completing the projects that I had personally sought out did I get important feedback from my assignment leader. Once I had proved to my assignment leader that I was a skilled hard-worker, I began receiving many important projects to complete and much more feedback on my work.

By the end of my work term, I realized that I may not want to pursue a very technical role in engineering after graduation. I enjoyed the level of responsibility and visibility that I received talking and meeting with GE suppliers. Now, I plan on finding a job that would use my technical skills to supplement a more business-oriented role. I would never have found this out if I didn’t take a chance and choose a less technical job that may not have aligned with my interests. Looking back on my time at GE and the choices that I made during the fall semester, I would not have done anything differently except try to actively seek our projects to work on earlier during my term.

It is also important to mention that having one’s own car is vital when working for another company. Unfortunately, I did not have a car with me and I had to depend on my roommate taking me to the GE plant and back. Luckily, any stores that I needed to go to were within a five minute walk from my location, and I did not have to constantly ask my roommate
to give me a ride. In the end, it turned out that also making sure that an apartment complex is close to any stores or facilities that one may require is an important thing to consider.
comparing parts lists for the 2E1 and 2F1 engines to see what parts had to be changed out, mapping out the engine teardown and rebuild, figuring out which parts had to be instrumented or inspected and cleaned, as well as learning about why certain upgrades were made to the 2E1 to make the 2F1 engine more efficient.

One of the benefits to being in a project role was that I was also able to gain a better understanding of how the business runs as a whole. I was able to sit in on a number of upper level meetings and observe how issues are handled and how money and resources are allocated within a program. This understanding of the business helped me understand how the design engineers and business leaders work together to make the most efficient and profitable engines.

Outside of GE, there were a lot of activities going on for the co-ops as well as a lot of GE run summer networking events. Through the GE intern/co-op listserve, I was able to participate in fun events such as Redsox games, laser tag, dinners, flag football, and many other social events throughout the summer. Beyond just the co-op network I developed, I also joined the GE softball team which consisted of a number of full time employees at GE. This was a fantastic opportunity to network with GE employees in a laid back setting and ask them questions about what it's like to work for GE full time without the pressure that comes from a formal networking event or interview. Overall, I had an amazing time this rotation. I learned a lot about jet engines and I made a lasting network of friend at GE.
A. I worked in the role of a Commercial Manager for the Wind Services Commercial Operations. My group supported the Sales team in their effort to sell wind services (upgrades and maintenance services) on GE wind turbines. We ran cost models to produce pricing, developed external customer documents to capture the value added from GE technology, assessed the technical requirements and possibilities for different product offerings a specific site and negotiated and wrote the Terms and Conditions of a deal. I worked mostly with underperforming wind sites and how these customers could use GE upgrades to increase their production and become profitable. I looked at both the commercial side (revenue increases, cash flows, net present values) and technical side (sourcing requirements, production increases) of these projects. As I was unfamiliar with many commercial aspects, I was trained in these topics by some of the coworkers.

B. While my engineering and critical thinking skills were useful in my role, they were not integral. However, I found my experience is going to further my educational experience by furthering my insight into the commercial site of an engineering product. In my degree, I focus mostly on the technical and design aspects of a product. Now, I have furthered my understanding of the value a product brings to a customer, and how this goes into pricing and selling this product. Also, the role was in wind energy, which is a great interest of mine and goes along with my minor of Sustainable Energy Systems.

After doing this role, I feel as though I am interesting in pursuing a role in the commercial side of engineering. I enjoy working with people and using technology to meet customer’s business needs. I would definitely take a role like my current role again; however, I would have like to read into some basic economic terms (NPV, cash flow, etc).

C. Life outside co-op was interesting. Schenectady is a rough town. While I feel mostly safe where I live, I feel quite nervous in the neighborhood just a block away. I would highly, highly recommend that co-ops live in Albany or Saratoga (it is worth the commute and the extra money!). I was able to spend time with other interns. We had a game night once a week which was a really fun way to spend time and compare experiences. I was also able to spend time with people I worked with after work, which was rewarding.

D. I loved my job. I feel like a got an awesome insight into a technical job that is not hard engineering and learned a great deal about the commercial world. I really liked the people I worked with-- very passionate, active and intelligent people who were welcoming and encouraging. The worst part of the job was where I lived. There is not much to do in Schenectady and I wish I had a roommate.
Job Summary

A. Co-op Work Assignment

General Electric Energy Storage is responsible for the manufacturing and design of the new Durathon Battery. This battery is based off of a molten salt chemistry developed in the 1980’s but commercialized and scaled up only recently. Specifically, I worked on the motive team on the commercial side at Energy Storage and focused mainly on industrial motive and transportation market segments. My official job title was Motive Market Analyst.

To give some background, GE Energy Storage is essentially a third year startup backed by GE Transportation and GE Capital. For the past three years, Energy Storage has been focused mainly on the following: building a new large scale, state-of-the-art factory; developing batteries for stationary devices (UPS, Telecommunications Backup, Grid Storage, etc.); and targeting customers focused on those markets. Starting in early 2012, Energy Storage began to move into the motive market and started up a brand new motive commercial team devoted to all-things electric vehicles, whether it be car, bus, train, boat, or forklift.

When I joined the motive group, they were in the midst of customer discovery and market research i.e. they were researching and meeting with potential customers to figure out who’d want to buy a Durathon battery and figuring out what new module of battery should be developed should GE enter the motive space. My assignment leader and mentor was Matt Maroon, the product manager of motive batteries. The first two assignments he gave me were heavily focused on market research and lead generation – I researched two medium to small sized markets, determined the market size, and developed a simple metric to ascertain which companies to target. From there, I was able to send a few “feeler” emails and gather contacts from individuals within the industry in hopes of generating leads or sales. These two assignments proved very useful as they introduced me and immersed me into the world of the industrial motive market.

Following those tasks, I was asked to help out by diving further into the industrial motive market and segment the market, develop a value proposition for the transportation space, and aid in setting up a possible pilot project. Segmenting the industrial motive market proved to be a little difficult as I couldn’t find much publicly available information about market breakdowns. Even reports by private companies had little to offer. Developing the value proposition for the transportation space was fairly interesting as it had a lot to do with electric vehicles. I was able to come up with a rather simple value proposition for an electric truck as a simple tool before a better model could be found.
B. Assessment of Learning and Development

My educational background and the worked I was involved in were mostly separate seeing as I study chemical engineering and I worked a marketing position. This is not to say my chemical and engineering background did not help, though. The battery I was working to sell was based on a new-to-market chemistry and it was extremely beneficial to understand how that worked. Also, the analytical thinking and problem solving skills I’ve learned from my engineering coursework proved useful in my daily tasks.

In regards to my career aspirations, I’m fairly interested in business (I founded the Cornell Science and Engineering Business Association) and this role gave me fairly good insight into external facing positions and how engineering and business work together. I found that I was interested in the product development and product management side of things and might even consider working a similar role out of college.

I believe that my biggest area of personal development came on the management side. While personally, I did not have anyone to manage; I was able to compare how my assignment leader managed me and how other assignment leaders managed their own interns. I was surprised to find such a wide range of styles. Some manager’s seemed to excessively micromanage an intern leaving them no free time and ultimately making their time unpleasant while some manager’s didn’t even take the time to plot out the intern’s summer leaving them with nothing to do. By gathering these experiences, I’ve been able to look at my own managerial experience and hopefully change a few things about my style when I go back to leadership positions at school. The experiences also made me appreciate the assignment leader I had.

C. Life Outside of Co-op

Finding housing with GE is generally fairly difficult as they do not provide you with many resources. Fortunately, I was able to find housing with other Cornell students who previously searched the Albany / Schenectady area and join their group.

A car is definitely recommended and might be a necessity. I lived in Albany and had to commute 20 – 30 minutes to work every day. If properly planned, it would be feasible to coordinates ride to and from work getting rid of the need for a car, but having the independence of your own car would certainly be easier. Also, I would recommend getting an EZ-Pass as there are tolls.

The ended up hanging out with the interns I worked with the most. They’re all college students so it was easy to organize nights to go out or just hang out with each other. Albany was also only three hours from New York City, Boston, and Ithaca so weekend travel was fairly easy.

D. Evaluation
Overall, I really enjoyed my time at GE Energy Storage. Comparing my experience with my previous co-op in Erie, I felt I held a greater role in the company and was actually able to help in some ways. I think the best feature of the job was actually the environment I was able to work in. I've always been interested in working for a smaller company or a startup, and to finally have the experience of working in that atmosphere (despite being a part of GE) confirmed the benefits of small businesses.

The worst part about the job might have been how short the internship was. The timeline of researching customers, reaching out to them, starting a pilot project, and selling batteries to them is on the scale of many months not ten weeks. I would have really liked to see a project go from start to finish.
A. Co-op Work Assignment

General Electric Transportation is responsible for the manufacturing of locomotives, heavy equipment, mining vehicles, diesel engines, and generators for wind turbines. Specifically, I worked in the Information Based Solutions department, located in Building 50 of the GE Transportation Plant, which focused on the on-board computers and various electronics found on locomotives and also provided 24/7 support to locomotives via their Remote Monitoring and Diagnostics Center.

My main responsibilities as a co-op dealt with the repair and return of these on-board computers. The on-board computers, also known as Communications Management Units or CMUs, are used to gather and process data regarding the health of the locomotive, communicate this data to the Remote Monitoring and Diagnostic Center, and to run several applications designed to support the locomotive, such as a Fuel Trip Optimizer. However with CMUs being such sensitive pieces of equipment running on the harsh environment of a locomotive, many of these computers experience failures and require repair. My job was to collect the failure data on each failed CMU, given to me in the form of Failure Analysis reports from our supplier Nortech, tabulate and compile the data into graphs and useful charts, and build a Powerpoint presentation which I would present to my boss on a weekly basis and present to a program leader and various field team members on a biweekly basis. Several side projects would often come out of these weekly and biweekly meetings as participants would like to see metrics specific to their railroad or would like me to follow up on trending failures.

My other responsibilities as a co-op revolved around indirect material and services ordering and tracking. With this, I had to use General Electric’s Engineering Notice (EN) Workflow, which is essentially a document conveying engineering instructions to functions internal and external to engineering, and Oracle SSS, an internal requisition system, to purchase tools and equipment for various members of the I-Based team.

Training was generally given to me on the spot for my role, but I did receive an orientation checklist of meetings to attend and people to meet on the very first day. This orientation checklist proved to be very beneficial to getting up to speed on all the terminology and lexicon used at GE Transportation.

While I did have an assigned mentor, he fell ill within my first month at work and I was not able to work as closely with him as I would have liked. I was, however, able to ask my co-workers and supervisors of any questions I had.

B. Assessment of Learning and Development

Majoring in Chemical Engineering, I had a lot of difficulty finding any directly relatable educational material that corresponded with my work. However, I did take a couple courses in Java which aided me in writing Excel macros as well as a basic statistics course which helped me
Derrick Wu

Dtww39

Chemical Engineering

G.E. Water & Process Technologies

Fall 2011 (First Term)

Job Summary

I co-oped at the G.E. facility in Westborough, MA. This facility produces various membranes including micro-filtration membranes, which is what I worked with most. My main objective was to reduce the amount of scrap being produced. I was assigned various projects to try to achieve this goal. The major project I had was to complete the programming for a Microsoft Excel VBA user interface to help store data into a database for each of the membrane casting lines. The hope is that, once implemented, the database will make it easier to analyze data and determine how various parameters affect the properties of the membrane cast (which is not being done with the current physical data sheets that we record data on). Another major project that I was involved with was determining how to increase the pore size in the nylon membrane. I performed small-scale mixing lacquers with different salts in varying concentrations and made table-top casts using the different lacquers. I tested the membranes to determine which salts and concentrations increased the pore size in the membranes. My assigned mentor was Gil Tavares, a technologist who has been working with membranes for many years. He helped me with my projects, and it was he whom I approached with most questions I had. He also gave me various other smaller projects. For instance, I helped qualify one of the products by designing and performing tests to determine what conditions were still suitable for the membrane such that the water being filtered through the membrane would not undergo a pH change of more than 0.3. Another smaller project I started was creating an effective test to determine how much protein binds onto a membrane disk. In addition, I helped other co-workers with various other projects if they needed help.