A. Co-op Work Assignment

During my co-op term I worked as a process design engineer in the project development group of Beaumont Area Projects. The function of my working group is to design capital projects for the Beaumont Refinery, Chemical Plant, and Polyethylene Plant. This consists mainly of exploring all plausible options for execution of the project, assessing whether the projected benefits of the project outweigh the projected cost, and developing the lead case for implementation.

I was given four projects upon my arrival, and three smaller projects later when one of the original four was put on hold. One of these projects consisted of adding temperature and pressure instrumentation to lines carrying catalyst particles entrained in either nitrogen or hydrogen. The additional process data provided by the new instrumentation will allow the velocity of the catalyst particles to be better controlled to avoid internal line corrosion. Another project was to design a new connection from a unit in the refinery to cracking furnaces in the chemical plant. This will allow for a more profitable use of a large process stream, resulting in a several million dollar margin improvement per year for the chemical plant. I also worked on a project to redirect a stream from continuous flow to the flare, to flow to the refinery fuel gas system. This will require new piping and a new control valve. I also worked on a project that would connect compressors from different units in the refinery to allow them to share gas and reduce flaring during start up, but this project was put on hold. In place of this project I was given three small projects to address safety issues that had been identified in hazard assessments over the past few years.

Most of the training that I received was not in a formal setting. I was taught a lot about the organization of the company and the procedures associated with executing capital projects through discussions with my mentor, and through asking questions to various coworkers. We did have some official training meetings on the different sections of ExxonMobil’s capital project management process, protection of proprietary information, safety, and various technical topics.

B. Assessment of Learning and Development
My work activity was very closely related to my educational background. All of my projects required understanding of mass and energy balances, thermodynamics, fluid flow, process control, and other chemical engineering topics. There is a good chance that I will want to work in the oil or chemical industry after graduation, so this co-op has been very closely related to my future career interests.

I have been very impressed with the culture at ExxonMobil. Everyone has conducted themselves in a very professional manner, and there is a genuine commitment to work that is both of the highest quality and safe.

Probably my greatest challenge during this co-op term has been exercising the confidence and strong interpersonal skills required in a large company. I feel that my experience here has been very helpful for me in these areas, I have become much more confident and more persistent in my pursuit of successful completion of my work.

If I could go through the same experience again, I would make a very strong effort to be persistent on my projects from the very beginning. I would also make an effort to ask more questions and have more communication with my mentor and coworkers earlier in my term.

C. Life Outside of Co-op

Housing was provided for all of the ExxonMobil Co-ops in Beaumont. The accommodations are very nice and very new. They had had us in a nice gated apartment complex with a pool, sand volleyball court, workout room, pool table, and other amenities. The apartments themselves have two bedrooms and two bathrooms, so space is not an issue. There was also an option to take a lump sum housing subsidy and find your own housing if you so choose.

ExxonMobil employed 19 co-ops during the fall 2009 term, almost all of who lived in the same apartment complex. This makes social interaction in a new environment very easy. We got a lot of use out of the sand volleyball court and the nearby soccer fields.

ExxonMobil places a very strong emphasis on volunteer efforts. During my term I participated in Habitat for Humanity and spent a day teaching local middle school about personal finances. Both of these were full day events organized by ExxonMobil. The company also encourages participation in the local chapter of the United Way. There is also a group called the Beaumont Newcomers Network that organized events and trips every month or so at which all co-ops and new hires are welcome.

D. Evaluation
The best feature of this job has been the opportunity to get a first hand look at chemical processes. Being able to combine engineering calculations with actual examination of the physical situation in the field has been very rewarding. I have enjoyed beginning to find out what is and is not important from the knowledge I have gained from school.

The other great aspect of this job is the ability to make real, quantifiable contributions. I worked on several projects, each with a clear and significant benefit for the company. The work that is given to co-ops is not just work for the sake of work; it is all necessary and important. It is much easier to produce high quality results in a timely manner when you are able to see the benefits of your work.

The worst features of this job are probably the start time and the weather. After being in college for a couple years I’d be come very used to never being awake before 9 a.m., and in this job the typical starting time is anywhere from 7 to 7:30. This probably doesn’t bother many people, but it was definitely one of my least favorite aspects of this experience. I find getting up when it is still dark out very depressing. Another issue is the weather, it is very hot, and very humid here. This job does not consist of being in an office all day, in almost every position, going out in the field regularly is part of the job. For safety reasons everyone is required to wear fire retardant clothing, steel-toed boots, and a hardhat, which isn’t the most comfortable set of items when it is 95 degrees outside. The work itself leaves little to complain about in my case, but it varies from co-op to co-op depending on your work group.
I am a Junior Chemical Engineering Major and my first work experience in an industrial field was with ExxonMobil in Baton Rouge, Louisiana. I worked at the Baton Rouge Polyolefins Plant (BRPO), which produces over 5.5 million pounds of high density polyethylene (HDPE) and 2.5 million pounds of high density polypropylene (HDPP) daily. HDPE is the plastic used to make number 2 recyclable bottles (on the bottom of plastics there is a triangle with a 2 in the center). This material is very versatile and is used to make blow-molded milk containers, carpet backing, truck bed liners, surgical gowns and even diapers across the world.

The most important part of a Co-op assignment is to evaluate whether or not the job and living situations are something enjoyable that you would like to continue after graduation. For me, the most essential part of this evaluation is the working experience itself. Throughout my fall term, I designed new equipment and upgraded current systems that maximize efficiency and natural resource losses. In addition to these projects, I was involved with the daily performance of our six HDPE reactors and extruders working at their maximum capacities. Throughout these two main tasks, my plant is currently undergoing a 150 million dollar upgrade to a modern controls system. This is the largest capital investment in North America for ExxonMobil Chemical, and the project itself is all encompassing. The project is adding new instrumentation and control systems throughout the HDPE reactors that cause operators and engineers alike to constantly be re-training for the new systems. During this massive transition period, I was lucky enough to have constant assignments and work. Everyone was kept busy with all of the construction, and of course, safety was always the prominent concern for all daily activities.

I had one project where I had to find new methods to keep track of all of our plant’s utility accounting numbers from the field. The project replaced all of the old meters that were used for billing purposes with more modern and upgraded meters. The only problem with this change is that the old and new meters were not calibrated the same way. If one of the new meters gave a reading different than the old meter would have and this was not known, my plant could be charged almost an extra million dollars a month in utilities that were never used and not even know about this discrepancy. This project was interesting because it gave me a new perspective on how the business operates from an accounting perspective to actually make a profit. My normal daily activities did not deal with this side of the business, but only with efficiency problems that maximize production. A broader perspective is something very valuable in order to understand why certain decisions are made.

Overall, my projects were assigned with a very good progression. At the start of the fall, my assignments were mostly out in the field in order to acquaint myself with the operators and
physical equipment in the field. This was necessary for me to understand future projects and functionality of our reactors and columns. My assignments became more advanced and complicated, not only from a design perspective, but also in terms of importance. At the end of my term, I worked on a project that had to do with a safety critical block valve. If it failed, it could release a potential 20,000 gallons of hydrocarbons into the atmosphere. This project required me to work with many groups in addition to normal design engineers, including instrument technicians, the safety department and the global safety team. I would have never been prepared for this difficult assignment if I were assigned it at the start of my term at BRPO.

I had an official mentor from my first day at work, but as time went on, I believe that everyone turned into my mentor since I was comfortable going to anyone for advice and help with any problems I had. Everyone in my plant was always more than willing to assist me in any way that they could on my projects or anything else. The culture of my work environment was very friendly and everyone associated with everyone else on a daily basis. We formed our own community since the plant only had about 250 workers total. I am very happy to be returning to Baton Rouge again next summer to enjoy another assignment with ExxonMobil because of this greater learning culture. People talk with me about any topics and I have grown many lasting friendships that will continue for years to come.

Outside of work, moving to the south was a huge transition for me. I moved to Baton Rouge, which has a far different culture than Ithaca on many levels. I also did not know a single person living in Baton Rouge when I first moved down which is another huge change from college where you are with friends for the majority of every day. The apartment I rented was not in the best neighborhood and nobody else that I met from work lived remotely near me so I would have to drive for 15-20 minutes in order to hang out with my new friends. This drive was usually not worth the effort on a work night, so outside of work I did not do very much on weekdays throughout this fall.

On the other hand, every weekend was excellent and tons of fun. I met many people through the ExxonMobil Newcomers Club, which has employees with less than five years experience in the company. Through this group, I met and became friends with many people from various sites in the Baton Rouge area. Football and LSU home games are a huge event in Baton Rouge where the entire city rallies behind the home team. I was lucky enough to go to two of these games and join in the fun for every home game this season. Baton Rouge has a lot to offer young people if you know where to look for it.

All in all, my experience was excellent this past fall. The best thing about my term with ExxonMobil at BRPO is that I learned to truly enjoy the work environment of industry and the company as well. People were friendly and always to help me learn anything they could, which makes an inexperienced engineer’s job much more beneficial. The worst part of my term was my apartment’s location. This is an easy thing to change in the future, and next summer I will live with a good friend from work, so I will be able to have more enjoyable work nights.
I am a Senior Chemical Engineering Major and this summer was my 2nd term working for ExxonMobil in Baton Rouge, Louisiana. While last time I worked at the Baton Rouge Polyolefins Plant (BRPO), my latest assignment was at the Baton Rouge Chemical Plant (BRCP) in the Intermediates and Aromatics Technical department. I mainly worked in the Oxo unit, which produces various grades of Oxo alcohols and Plasticizers from Olefin feedstock through a series of reactions. These Plasticizers are used to make plastics soft and are used in cars, electric cables and even floors. I also worked in fluids units that generate Methyl Ethyl Ketone (MEK) and Iso-Propyl Alcohol (IPA). These fluids products are as solvents in various applications from cleaning CDs to manufacturing plastics, waxes and glues.

The most important part of an internship experience is to evaluate whether or not you can see yourself with a full time job in that field and specific company after graduation. This is not a simple decision based on whether or not you enjoyed your work, but is a more involved assessment of looking to the future for a full career with the company and being able to enjoy not only your work environment, but also your overall experience outside of the office as well. I will break down these two key elements from my experience this summer.

To begin with, my transition into the job was very smooth with a regimented schedule for the first week in order to complete my training and access all in a timely fashion. During this week, I was also introduced to my future colleagues and became familiarized with my units and projects. I was given a mentor and buddy which were both readily available for asking questions and learning the different processes needed to complete my projects. My hope going into this internship was to be able to apply classroom knowledge to pertinent projects that would allow me to learn and grow as an Engineer while adding value to the company as well.

My hopes were met in every respect and I was given projects that not only applied classroom knowledge, but also required me to learn beyond this basis in order to fully understand problems I was presented with. For example, I had learned how to work with centrifugal pump curves and control valves, but my projects required that I learn to work with PD pump curves and evaluate control valves in series within a matrix of piping. The transition from an academic world to the workplace is always a slight shock. Instead of having all of the information needed for every problem, there is almost always information that is not readily available in the real world. I learned that part of being an Engineer is being able to simplify a system and evaluate what is actually necessary information in order to solve a problem. As long as there is a basis, ignoring insignificant information and making assumptions is critical to moving past obstacles.

One of the aspects that went far beyond my expectations this summer was the enormous scope and responsibility I was given. In addition to smaller assignments, I was assigned five large projects that each had an impact of over a million dollars per year. This large scale is exactly what I was hoping for and is due in part to ExxonMobil’s philosophy for rewarding hard work and more importantly continued support from my supervisors and workgroup. Being able to work on projects that have this large of an impact as an intern is great preparation for future jobs that will have even larger implications for the company.
My life outside of work was very different from my first time in Baton Rouge this past fall. First, the weather is extremely hot and humid during the summer with an average day around 95° and a heat index over 110°. This is much hotter than in Ithaca, but over time you get used to the climate. During the summer, I have been tubing three times on various rivers, which is a very relaxing and fun time. I have been to various activities with the Newcomers Club, which is an ExxonMobil group of employees with five or less years of experience with the company. I have traveled to New Orleans, Austin and Houston with other interns and employees on weekends to enjoy all that these cities have to offer. I even went skydiving one weekend, which was one of the most thrilling experiences of my life. I live with a full hire and his friend and have a 25 minute commute to work each day. It is much cheaper and easier to rent a room from someone who already lives in the area because you do not have to deal with landlords, utilities or furniture when you are here for a short time period. In addition, my rental rate for the room is far cheaper than what I was paying this past fall for a studio apartment in a worse location. I would recommend talking to Human Resources to find full time employees that would like to rent a room to an intern no matter where your Co-op is located.

Overall, my internship experience was excellent this summer. I had a great work experience where I was able to develop personally and as an Engineer. I had an amazing workgroup that allowed me to become part of the team as soon as I started and I was able to make an impact to help make the units I worked on more efficient in the future. The best part of this job was observing how the Oxo business operated day to day and seeing how this operation fit into the larger global picture for ExxonMobil corporate. I was lucky enough to meet with technology experts from Belgium that develop and implement new technologies into units throughout the world. They helped me understand ExxonMobil’s global Oxo business and how Baton Rouge fits into the big picture. My least favorite part of this internship was not being able to see my projects actually implemented in the field. Projects take time to design and review, but it also takes times to order materials and get funding in order to install them in the field. Although I was able to work through the entire design process and I know that my projects will come to fruition, seeing the completed work on the unit would be even more thrilling than simply knowing it will happen in the upcoming months.
A. Co-op work assignment

My work group this summer was the Operations Support Department at the ExxonMobil Beaumont Refinery. This group consists of three sections: Light Oils, Heavy Oils, and Utilities/Oil Movements. Each group is responsible for daily interaction with, and support of their corresponding area of the refinery. Each group consists of contact engineers, complex engineers, and a section supervisor. The contact engineers are responsible for the short term, day to day optimization and troubleshooting of their unit, while the complex engineers are more experienced technical experts responsible for long term improvements to their units and providing technical support to the contact engineers.

I was in the Light Oils section, working as the contact engineer for the Isomerization Unit. My main task was to monitor the unit and interface with the Light Ends Business Team on a daily basis, and address all engineering concerns that arose. There were a few major unit issues that I spent a large portion of my term dealing with. The largest of these was the fouling and leaking of the Stabilizer Tower overhead condensers. The poor condition of the exchangers resulted in very hot off-gas and reflux from the tower. In addition, there was a tube leak in one of the exchangers that was allowing hydrocarbons to get into the cooling water, causing potential environmental and safety risks. I also worked on minimizing a recycle stream at the Isomerization unit that is responsible for smoothing out feed rate to the unit, and the creation of a tool in excel to monitor the key parameters of the unit on a weekly or monthly basis.

Training for my job was provided mainly by talking with my assigned mentor, who was the previous Isomerization contact engineer. I also learned a lot about the responsibilities of my job from discussions with my section supervisor, second line supervisor, and the rest of the light ends business team. Training regarding safety and company policies was provided by a series of presentations followed by short comprehension assessment tests.

B. Assessment of Learning and Development

My work responsibilities tied in very closely with my educational background. The Isomerization unit incorporated distillation columns, reactors, heat exchangers, absorbers and scrubbers, and I was responsible for ensuring that all of them were running as efficiently as possible. I used my education almost entirely in qualitative ways. I did the occasional mass or energy balance, but for the most part it was simply a matter of knowing which variables could be altered and, directionally, what effect they would have on the process. I think it is very likely that I will work in this or a similar field after graduation, so this co-op has been very much in line with my career interests.

I believe this position did a great deal to advance my professional development. On a daily basis I worked with engineers of widely varying experience and career path, as
well as people in operations who had a whole different set expertise. I learned a lot about how problems really get solved, and the people required to solve them.

This position gave me a highly elevated level of responsibility from my work last term, which itself was already a large jump in responsibility from any work I had experienced previously. I was able to make decisions that impacted the operation of the unit in an immediate and significant way, as opposed to working on a project that would go through several reviews over the course of months or years before finally being implemented. This direct connection between my decisions and the process meant that I had to be very careful, and be able to take responsibility for my decisions.

If I were to go through the same experience again, I would ask more questions early on. It can be overwhelming and stressful at first to be thrown into a position like this, so I spent most of my time listening. I could have gotten more out of what I was being told if I had asked more clarifying questions.

C. Life Outside of Co-op

Housing was provided by ExxonMobil, so that aspect of my time here was very easy. The apartments are very upscale and new, each containing it’s own washer, dryer, and dishwasher, and all the co-ops lived in two bedroom apartments with one other co-op. The apartment complex also has a well maintained pool, sand volleyball court, gym, and pool table.

Getting around Beaumont does require a car; public transportation is not an option.

Most social activities revolve around the apartments because typically all of the co-ops are housed there, making social gatherings very convenient. There are a few work related groups dedicated to providing activities for new hires and co-ops, so there are usually various trips or athletic contests available. ExxonMobil will typically also schedule full day community service events for all of the co-ops such as a habitat for humanity builds. These are not required, but they are a lot of fun and a nice break from the typical work day.

D. Evaluation

The best features of this job were the high level of responsibility and the fact that it allowed me to be self-reliant. I had a fantastic team of people available to help me, but I was in a position where I was able to complete much of my work either on my own, or with people who cared about the outcome as much as I did. I did not have to spend a lot of time waiting for people to give me information, and I rarely had to bother people with tasks that they were not interested in. I was held to the same standard as the full-time engineers, and I think that helped me to perform like one.

The worst features of this job were the location and the temperatures. Beaumont does not offer the variety of a big city nor the outdoor activities found in many rural areas. This certainly isn’t an insurmountable issue, I had a lot of fun during my term anyway, but it is certainly not an ideal location. I was also not used to the extreme temperatures and humidity of southeast Texas, but most places are air conditioned, so it’s really not too much of an issue.