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STEM EE Scholars Interview Project

When searching for individuals to choose to interview for this assignment, I made sure to keep my options open to ensure that I did not overlook a certain undergraduate student, graduate student, or professor. It was quite easy to find the undergraduate student, as I interviewed my STEM Exploration & Engagement Scholars (STEM EE) program mentor, Kyle Kottyan. I asked Kyle to meet up with me and he agreed. For the graduate student, I decided to ask my TA from Fundamentals of Engineering, Isabel (Isa) C. Fernandez Puentes. because I enjoyed the class. I also knew that I wanted to interview someone that is in the field that I hope to be in. I emailed Isa to ask if she would meet with me and we agreed to visit during her office hours. Choosing the professor who I wanted to interview required more research. With such a large group of professors at The Ohio State University, I wasn't exactly sure where to start. I wanted to try and find a project that had been done through the College of Engineering, so I decided to go to the research news tab on the Ohio State College of Engineering website. After looking through this, I found that there was a study done by Dr. Barbara Wyslouzil, of the Chemical Engineering Department here at Ohio State. I found that Dr. Wyslouzil also has taught the Fundamentals of Engineering II course here at OSU, so I decided to shoot her an email. I also sent a few other emails to other professors, but Dr. Wyslouzil seemed to express the most interest. I decided to meet with Dr. Wyslouzil during her office hours.

My first interview was with Kyle Kottyan. Kyle is my scholars mentor for STEM EE. I asked Kyle questions along the lines of obtaining more information on how to do well as an undergraduate student, how to get experience, and how to take on engineering classes. Kyle is a Computer Science and Engineering major, so he knew a lot about some of the classes I am taking. He said that he does not recommend studying in the dorm room, due to all the distractions. I agree with this statement, and usually am in the library. Kyle did an internship last summer and says that there are a lot of firms that will hire first years if you know where to look. This is something I have tried to consider because I want to gain experience as soon as possible. An issue Kyle had with his first-year engineering classes that Kyle had was working with his Fundamentals of Engineering team. Kyle said he handled it by talking to the professor and then working on a specific project alone. I prefer working alone over working in groups, so it was good to know an upperclassman that had the same preference. Kyle also recommended taking the engineering ethics class, as he found this class very influential. Meeting with Kyle really helped me understand what it takes to be a successful student, and he helped me realize that you do not have to be a genius to succeed as an Ohio State engineering student.

Following my interview with Kyle Kottyan, I went to see my TA from Fundamentals of Engineering. I am really considering research and graduate school, which is why I went to see Isabel C. Fernandez Puentes. Isa said that she was missing the connection between undergraduate engineering education and the real world, which is what led her to pursue a graduate degree. She says that the best way to prepare for grad school is to get as much exposure as possible. This can include doing research, entering in competitions, or doing internships. She also recommended talking with professors, which can lead to recommendation letters, getting your name out, and additional research opportunities. Isabel recommended finding someone that

can coach me along my engineering education. Isa's love of math is what ultimately led her to get an engineering education, because she did not want to study pure math and instead wanted the freedom to pick the direction of her education. According to Isa, graduate school requires much more independence than undergraduate. Success depends on how dedicated you are and how on top of things you are. When searching for research, Isa said to find someone that reflects your interests, not someone that was recommended to you because they were "nice and good to work with".

Looking further into research opportunities, I spoke with Dr. Barbara Wyslouzil. I asked her about her research and how she came to be in the position she was in. She told me that she had started with research in her undergraduate education at Queens University, where she did an experiment with the transferring of oil. She said it was a fun experiment, but not too much came out of it. All of this led up her most recent study with ice crystals. Dr. Wyslouzil, along with graduate students, had the ability to make ice crystals that were 80% perfectly square. I had asked Dr. Wyslouzil how she selected these graduate students, and she told me that she selected them from the department, however, undergraduates had the ability to apply. I asked how I could get involved with research, and she recommended talking with as many professors as possible. She said when research opportunities arise, to take advantage of them and apply, although it is often hard to include undergraduates in expensive experiments.

When searching through all the articles to read, I came across the article by Dr. Wyslouzil. I wanted to read it because it was published on Ohio State's engineering website and contained a lot of information on chemical engineering. Although I am a mechanical engineering major, I found this interesting because of the effect of it on climate change. Dr. Wyslouzil found that square crystals can only be created in a lab, and not the atmosphere. It was found, however,

that these square crystals can allow scientists to study how clouds interact with sunlight and the atmosphere. This information can help understand climate change. Another article by Wyslouzil discussed reducing costs of oil transfer using water instead of natural gas condensate. Although natural gas condensate is still used today, it was found that using oil-in-water could reduce freezing in Alberta crude oil (oil used for the experiment). These scholarly articles were difficult to understand, so it was crucial to focus on the abstract when attempting to read them. Although they may be difficult to understand, scholarly articles are essential for sharing information among scientists and professionals. It is advantageous because the articles are peer-reviewed by many professionals and can quickly be shared and referenced. A possible disadvantage of this, however, could be that engineers are often used to concrete information, instead of long, thought out journal entries used for scholarly articles.

This assignment required me to step outside of my comfort zone. As a first-year student, it is often hard for me to talk to a professor with a doctorate when I have such little experience. However, this assignment helped me realize that professors are people too and very much enjoy talking about their work. Both my graduate TA and the professor I spoke with enjoyed sharing their experiences. This experience also helped me connect more with my STEM mentor, as well as learn how he survived his first year. I gained a lot of valuable information throughout this project and will use it throughout my years here at Ohio State.