DATE: **March 29th, 2021**

TO: **Dr. Deirdre Hunter**

FROM: **Nora Han**

SUBJECT: **Self-Reflection Memo#11**

My name is Nora Han, and I'm a Rice 24’ Engineering Student. I’m considering choosing the Environmental Engineering major. I’ve explored the relevant field and enjoyed the experiences.

With my lab research experience in cell biology, I decided to start an environmental research team focusing on bio-pollutants in drinking waters. We started helping the Xiaobeihe villagers. We traveled to villages in suburb Beijing to discuss with locals about possible ways to use technology to alert E. coli pollution. We optimized the traditional Bluephage testing method and sent the detection kit we designed to the over 500 villagers so that they could quickly and cheaply test their local water sources. But I was soon reminded that the initial success in detecting E. coli and sending out detection kits isn’t the ultimate solution to the problem. Looking into the Flint Water Crisis, I started realizing that environmental issues are never a simple technical problem.

To better understand and address these problems, I plan to be an engineer after graduation. Both of my parents are engineers. They worked as mechanical engineers. I imagine my future job routine to be similar to theirs. If I choose to do research for companies, I would envision my work to be solving technical problems or making improvements to existing designsor I could be working on launching projects like my father. To achieve that goal, I plan to exercise my ability to solve real-life engineering or design problems. Although I might not be a qualified engineer right now, I would take steps to equip myself with the knowledge and abilities I need. Until now, I had not built a project applying the engineering design process.

In this course, I learned the engineering design process and used it to solve a meaningful problem: the petrifilms incubation process of water pollution detection process improvement. I was able to plan my work like an engineer by drafting a Live Gantt Chart. During the brainstorming process, the logical process of making a screening matrix and morph chart helped me better understand the evaluation process of an engineering design.

Most importantly, I have learned to make compromises. As a remote student, I’m not able to go in-person to the OEDK but after discussion with Scott, our design mentor, I realized that I could focus on the code designing and still be able to make plenty of contributions to our team. Taking FWIS 188 allows me to explore prototyping, designing, and programming to the next level. Being able to work in a team to solve real-life problems that could make instant contributions to society excites me. I can see my growth in setting goals for me and with my teammates and taking active steps to accomplish them.

Moreover, taking COMP 140 also helps me to build my coding skills. I have a deeper understanding of coding and understanding a program during the practices in this class. And I believe learning and implementing should go alongside each other since this is the best way to maximize the knowledge I learned during classes. In FWIS 188, I was able to apply the skills of researching and code re-using. And I am convinced that given time, I would be able to write codes like some of the best engineering students and engineers. The reason why I see myself as a future engineer is that I have the ability to make adjustments and acquire new skills. In this project, I was reminded that coding, like the ability to operate laboratory equipment, is a crucial part of engineering design and environmental engineering, and I should not hesitate to enrich my mind with coding knowledge.

In my opinion, the most important ability of an engineer is the competence to make concrete action points and stick to them. After taking this course, I have a deeper and more detailed understanding of the meaning of mapping a project. I still need more practice in reaching my ultimate goal of actually leading a project like an actual engineer (e.g. my father) does. But I am now able to work with and in a team to make considerable contributions as an engineering student. I will start by managing my parts of the teamwork and make more progress by working on other engineering projects to strengthen my managing skills.

In a nutshell, I believe that with better programming, prototyping, and most importantly, collaboration skills. I will be one step closer to my goal of being a successful environmental engineer.