Statement of Purpose FSE394:

I plan to get a MD and would like to work in a private practice as a primary care doctor. In addition, I would like to conduct research either within regenerative medicine or personalized medicine. This will allow me to combine my passions of getting to directly help and interact with patients with engineering devices to help others. These goals have been fueled by my collective experiences.

Through different experiences in my life, I’ve seen how drastically good health affects people’s lives. Within my own family, my brother struggled with health issues through high school and college. He has more recently gone through treatments that have been effective for him, and as a result has drastically improved health. Seeing the difference in his personality, confidence, and overall demeanor between then and now has been incredible to see and truly shows how deeply health affects the quality of one’s life. I would love to become a doctor in order to positively impact people’s lives in the same way I’ve seen doctors positively impact my brother’s life.

Throughout high school I loved math and science and have always wanted to design and create devices in order to improve others’ lives, both within the health arena and outside of it, which is why I chose to major in engineering. I’ve found my engineering classes to be extremely interesting and have really enjoyed developing my critical thinking and problem-solving skills in addition to collaborating with others on class projects in which I get to dive deeper into a particular problem in order to develop a potential solution. As a result, I would love to be able to not only directly impact the lives of patients that I treat but also indirectly help countless others that I will never meet, by creating a device or helping to develop a technology that will improve their lives. Additionally, I am currently in a research lab, which I have found to be very enjoyable as I love getting to design experiments to test different hypotheses I may have on a particular topic.

Within the field of personalized medicine, I would like to work on creating a device that can be used to decode the human genome more quickly, at a lower cost, and in a more compact form. This is paramount to making personalized medicine a reality as without being able to decode patients’ genomic pathways in a fast and cost-effective way, personalized medicine will be ineffective as it will only be used on a select few. Without having a large set of data to see how different combinations of genes may react differently to various medicines, knowing the genes of a select few will not be useful. My approach to this problem will consist of me systematically mapping the base pairs based off of the changes in electrical current. I believe that taking genetics as well as circuits will be particularly helpful to this research as it will allow me to gain a better understanding of how to measure and calculate electrical current as well as the properties of genes. I am hoping to present this research at a conference at some point, possibly at the BMES or IEEE Conference.

In summary, although I may not currently know everything necessary to solve this problem, I know I can learn these technical skills as I love continually learning and have great mentors who are knowledgeable within these areas in order to guide me. I believe that this, combined with my passion for helping people will lead me to be a good doctor and researcher.