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Restore and Improve Urban Infrastructure

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**GCS Reflection**

Throughout my time at Duke, I have sincerely enjoyed my experience as a Grand Challenge Scholar. Several of the GCS requirements were easy to fulfill due to overlap with Pratt’s engineering requirements, but being a part of the GCS Program has encouraged me to branch out beyond typical mechanical engineering courses and activities. For example, the interdisciplinarity aspect of the program motivated me to pursue courses in the German department, especially due to the intersection between Germany and sustainable engineering. I enjoyed the courses so much that I studied abroad - hence fulfilling a global requirement of the GCSP - and pursuing a second major in German alongside my engineering studies. I believe that the requirements of GCSP have made me a well-rounded engineer who is aware of all of the multitude of factors that go into engineering successful and sustainable solutions to global challenges. My undergraduate classes rarely address engineering ethics or culturally-sensitive designs, but my experience in the GCS Program has shown me how involved and thoughtful real-world engineering actually is.

Furthermore, I really enjoyed how GCS is so broad - with 14 challenges, there is at least one prompt that will strike a chord with any engineer. As a mechanical engineer interested in energy, I was most drawn to (1) restoring and improving urban infrastructure (with a special focus on energy infrastructure), and (2) making solar energy economical. GCSP captures the breadth of engineering and with broad prompts, engineers are inspired to pursue their interests while working towards addressing a global challenge.
Although I enjoyed my time as a GC Scholar, I do hope the program does grow in the future. At Duke, the program remains quite small and relatively unknown - with the exception of Dr. Schaad’s promotion in the Civil Engineering Department and Dr. Gustafson’s mention of the program during EGR103 freshman year, several engineers are unaware of the opportunity. I hope the university chapter continues to grow and involve more engineers within the Mechanical Engineering and Electrical and Computer Engineering Departments. Having a community of GC Scholars at Duke would be extremely helpful, so underclassmen can ask for advice on courses to fulfill certain requirements, how to approach the final thesis, and how to schedule their majors around the GCSP experiences. I think establishing a Slack is a great start, but having periodic check-in meetings would be extremely helpful to keep everyone accountable and engaged in the program.

Furthermore, I think it would be neat to establish a stronger connection between Duke’s chapter of GCSP and the national organization as a whole. The university chapter seems a bit detached, outside of the one summit that we attended this past summer, and I think that GCSP could continue to grow if we establish connections with the national organization and with other university chapters. Several students would also be interested in joining GCSP if there were more concrete connections with the National Academy of Engineering (NAE). Although the pandemic has impacted several conferences endorsed by GCSP and NAE, I think it would be a great opportunity if Duke continues to attend these events as pandemic restrictions are lifted. The conferences - especially those hosted internationally - encourage students to become involved and engaged with the program and with the NAE as a whole. I am thrilled to see how Duke’s chapter of Grand Challenge Scholars grows in the future, and I am glad to have been connected
to a small group of ambitious engineers just as dedicated to solving society’s greatest engineering challenges as I am.