Senior Capstone Projects

Whether they’re called senior capstone or by some other name, these culminating experiences ask students nearing the end of their college years to create a project of some sort that integrates and synthesizes what they’ve learned. Below are accounts from two student members on their experiences working through the capstone project.

Jake Shiraki, Cal Poly, San Luis Obispo

Ever since I was a freshman, I looked forward to the day when I would be able to complete my senior project and leave my mark on Cal Poly forever. The thought of all that creative freedom—to, say, design and build a solar-powered, mushroom-shaped coffee shop, if I so chose—was energizing. But, as I progressed into my junior year, I realized that the project that I thought would give me the freedom to think outside the box and pursue an innovative goal to my heart’s content was merely an illusion. Senior project, as I had been informed by classmates and professors, was a set class designed to facilitate multiple senior projects as quickly and efficiently as possible by focusing on one goal, one project. I was a bit disappointed.

Now that I am a senior and taking the senior project design class, I am pleasantly surprised at how much I am enjoying working on our assignment. I have always enjoyed working in groups, but what makes this project even more enjoyable is that I have also found the topic—organics processing facilities—to be inspiring. There is so much potential to decrease the amount of green waste and food waste that goes to landfills. Composting, anaerobic digestion, and gasification are technologies of the future—ones that will hopefully eliminate the concept of “waste” altogether and show that recycling is viable and environmentally and economically sensible. It is exciting to conduct research and accumulate knowledge that may help progress the development and implementation of these technologies. These new joys have offset my initial disappointments and have made the project worthwhile, despite the tremendous amount of time and effort the research and technical writing requires (but, that’s a whole other story).

For you freshmen and sophomores who are eager like I was to have the opportunity to undertake a self-directed senior project, fear not. The option to do so still exists; it just often requires additional planning and approval. I highly encourage you to start talking to your academic advisor/counselor well ahead of time to figure out how to propose your idea. Also, know that this path will probably require more time, research, and effort than a typical senior design class. However, do not let that discourage you from turning your solar-powered, mushroom-shaped coffee shop ideas into reality! Carpe Diem!

Kyle Eckart, University of Windsor

I had a great experience with my fourth-year capstone project. It was probably the highlight of my undergraduate engineering experience at the University of Windsor. That being said, I believe that the way that the project is treated could, in general, be much better. My project consisted of designing the upgrades of a wastewater treatment plant in Port Dover, Ontario. As part of our project, we were entered in the Student Design Competition of the Water Environment Association of Ontario (WEAO), a part of the Water Environment Federation. This was a very practical project that gave us a great opportunity to apply our education to a real problem and interact with experienced professionals while doing so. Capstone also gave me the opportunity to be part of a cohesive design team and play roles within that team that might not be given to an entry level or co-op engineer.

The capstone project provided great insight into the engineering profession and left me excited to finish my undergraduate degree and continue on...
with my engineering experience. For this reason, the capstone project can have a great influence on the students involved. From my experience at my university, I don’t believe that this importance is fully embraced by students and faculty. Some students seem to view the project as a final obstacle before their degree, rather than an opportunity to explore where their passions lie within the engineering profession. The freedom does exist to explore innovative projects; however, much more could be done to create an environment that encourages students to challenge themselves to step outside their comfort zone and find inspiration. Of course, there are constraints and requirements for fourth-year projects; however, these constraints are still usually much less than what students will experience once they graduate and become professionals.

The capstone project also provides an opportunity for educational institutions to shape the engineers of the future. If, for example, we believe that engineers should be more socially minded problem-solvers or utilize systematic thinking to a greater extent, emphasizing these concepts within the project is one way to start creating change.

My fourth-year project afforded me the opportunity to apply the tools and knowledge from my engineering education to a practical problem. I was provided with insight into the exciting field of wastewater treatment, a field which I may choose to enter upon finishing my master’s degree. One of the incredibly exciting things about engineering is the diverse ways in which an engineer can choose to apply their skills. For this reason, I would love to see an even greater emphasis on using the fourth-year project to embrace and explore this diversity.  

— Kyle Eckart

Student Corner is a bi-quarterly column written for (and by) student members sponsored by A&WMA’s Publications Committee. Have an idea for a topic or want to contribute a column? E-mail: studentcorner@awma.org.