

My Experience at ISU

In general, Iowa State University (ISU) does a good job of preparing students for engineering/programming, providing job opportunities to students, providing help as necessary, and teaching students well. As for preparation, ISU has prepared me for designing systems and processes, whether that be software or hardware, given that I am a Computer Engineer, but with more emphasis on software. Beyond designing, ISU has also prepared me to be able to find and solve engineering problems without the assistance of others, or at least not in a guiding sense, but more so as peers. Another aspect I think is extraordinarily important in engineering and software development, and most walks of life, for that matter, is working in teams/groups and having effective communication. ISU has done a good job in continuously having group-based projects and communication-based classes, whether that be directly or indirectly, that prepared me well for communication and team-based work in the real world. ISU also works on a student's ability to analyze an ethical dilemma in an engineering situation and determine how to solve it in the best manner. Situations such as these can lead to significant difficulties and consequences if not handled properly, however, I think ISU has prepared me well to handle such situations.

Regardless of whether ISU succeeded in the aforementioned categories, they did a great job of encouraging students to seek knowledge outside of the classroom, whether that be through peers, work, class materials but outside of class time, and even non-class materials but related, or even not related, to class work. Given this, I could further my knowledge in any of the above categories, or any other categories, using this extraordinarily important skill and desire to seek knowledge online for any topic. Such a desire and skill are invaluable in life as no one can

ever know everything, nor should they be expected to, so having the desire and ability to take a subject and go and learn it whenever you want is vastly important.

Delving further into external sources of learning, I did use these skills and desires throughout numerous classes in which either the lecture material lacked, was hard to follow, or, more commonly, I simply wanted a more extensive understanding that I could not receive from the lecture alone. Not only did this contribute to me being better able to understand and complete assignments and quizzes/exams, but this also led to me having a greater overall understanding of the topics I need to know for my future career. For example, after switching from an Agricultural Engineer to a Computer Engineer at the beginning of my sophomore year, I did not understand Java as much as I would have liked in ComS 227. So, given this challenge, I decided I would be better off scouring the internet for helpful information on learning the basics of Java, and object-oriented programming for that matter, instead of relying on my professors/TAs. This led to me having a greater understanding of object-oriented programming than I otherwise would have. To prove this, that same semester I got a part-time student offer from John Deere to be a Computer Engineer with a primary focus on software. Another example of needed external sources to complete classwork would be in ComS 309 where I spent a significant amount of time on YouTube or various other tutorial websites trying to get a better understanding of how to create screens in Android Studio, or how to use Kotlin, or how to communicate with the backend to perform the desired tasks, and more. In general, I used external resources to learn quite a lot of what was required for the majority of my larger projects, as the larger projects were usually designed to help expand one's knowledge and not just use what was already known.

As for the general resources I used to further my learning, I did not have any specific website or websites that I used throughout my time at ISU, rather, I would determine what I wanted to learn and at what level and then scour Google for what seemed to be the best result. From there, I would then begin reading the website or websites that I chose to be best and use

them to learn, or, if they were not as good as I had hoped, move on to the next source. Another source of knowledge I used extensively was bouncing ideas off of other students. I never really found myself relying on other students, but simply having anywhere from two to three or four of us get together to work on example problems to get a better understanding of the class was extremely helpful. This sometimes led to a deeper understanding of the material than I think I could have realistically gotten in any other manner in even double the amount of time. This is often an overlooked source of knowledge, but if done properly, i.e. not stealing answers, but bouncing ideas off one another and debating how to do a problem and *working* through the steps with one another, can be one of the most valuable resources anyone will ever have.

Outside of the classroom, I find that my participation was not as high as I would have liked in the past years, however, I still found myself participating in some crucial events/clubs. Specifically, freshman year, I found myself in ASABE, given that I was an Agricultural Engineer at the time and although it taught me important leadership skills, this club was the first time I had second-guessed my choice of major which encouraged me to learn more about other majors. With this and the fact that I was a freshman in honors, I decided I wanted to participate in a Computer Engineering project as a part of my honors research project. I chose this because I have always had an interest and passion for technology and coding sounded interesting, so this was as good a time as any to decide if I wanted to change majors. Ultimately, I did this research project (ARA) and found out that I was more interested in Computer Engineering than Agricultural Engineering. Had I not taken the opportunity to explore new avenues when given the chance, there is a possibility I would still be in a major that I did not thoroughly enjoy or want to spend a career doing.

After having switched majors, I find that I have not had any significant experience in clubs, aside from attending some ISU Google Developer Group meetings and events, but, due to a career fair sophomore year, I got a part-time student role, as a Computer Engineer, at John Deere. This has led to significant involvement at John Deere, and with fellow students from

John Deere, that I would have not otherwise had. This has allowed me to not only improve my technical skills but also make significant improvements to my portfolio, communication skills, and collaboration skills.

Outside of clubs, work, and school-related activities, I have spent some time throughout college, and more time recently, working on various programming projects of my own, whether that be something simple, complex, or even programming courses for languages I do not know or do not know as well as I would like. I have found this to not only be enjoyable since I have control of what I do and when I do it, but also a way to continue something extremely important, lifelong learning. Further, given the nature of my career, lifelong learning will also be exercised through my jobs throughout the years, as I always have to stay on top of new technologies to stay on top of my game. Another aspect of learning that I have recently begun, and plan to do significantly more of moving forward, is learning to take more risks in decision-making. Specifically, I want to be able to take calculated risks, knowing that there may be a loss, but one I can handle. This would allow me to further my career as an engineer and especially as an entrepreneur, which I want to be.

Speaking of always needing to improve my skills for my future career, I have also had some experience in doing so throughout my college career. Though not to the same magnitude as I imagine I will have to in the future, I have had to work on projects before that led to me having to work on my leadership skills, my creativity, or even my technical skills as maybe I did not know a programming language I needed to know for a project or I was not familiar with a certain program I needed to know. This happened more often than I would have originally expected but it led to me getting significantly better at recognizing what skills I need for a project and narrowing down my learning to specifically improve or learn those skills.

Despite the good experiences and significant learning that I have done throughout my time at ISU, there are some specific methods or learning experiences that I would change if I were to do my undergraduate work again. In general, I would like to increase my involvement in

clubs, specifically by getting more exposure to clubs as I found myself having issues where I could not find a club that I wanted to be involved in. This would be extremely beneficial in making connections and making earlier improvements in my communication and leadership skills. Another aspect I would change would be to start as a Computer Engineer, or even a Software Engineer, as I had wasted classroom time from being an Agricultural Engineer in my first year of college. Speaking of changing what major I started in, I would have taken Software Engineering instead of Computer Engineering since I have essentially just done an extreme focus on software within Computer Engineering. More specifically with the next change, I would have liked to have learned C++ as my first programming language as I think it gives a better understanding of how programming works at the base level, which, in my opinion, is essential to properly understanding what the code is going to do in any language.

In conclusion, my experience at ISU has been great and I would make very few changes if I were to redo my undergraduate work, with most of which being changes I personally would make and not the college. The skills I have learned, both technical and other skills, are invaluable to my future career, the work experience I have gained is invaluable, and the friendships and memories I have made along the way are also invaluable.