

Challenges, Success, Growth: My CYSE 368 Experience

Final Reflection

My experience in CYSE 368: Cyber Clinic has been illuminating. The in-depth instruction provided me with the necessary tools to succeed, the engaging mentorships prepared me for correctly anticipating and ascertaining client needs, and the constant feedback helped to push me to my fullest potential. Like all projects, there are things that go right and things that go wrong; but this course fully prepared me on how to overcome those obstacles. This final reflection will demonstrate how valuable this course was for me and how I will apply what I learned to my future.

What Went Right

For me, many things went right in this special session of CYSE 368. The preparation received from industry leaders prior to meeting our clients was invaluable. This helped to make our initial client day more successful because we had practice and the business leaders of CM Technology sought our guidance. The clients were very receptive, engaging, and more than willing to provide any resources that would help to give them the best assessment possible. They maintained great communication and were thoroughly pleased with the level of work presented to them. I was lucky to have CM Technology as a client, and the execution of the work and the final presentation went extremely well.

What Went Wrong

I would not say there were things that went wrong; I would rather say challenges were faced and overcome throughout the process. Initially, I mistook the scope of the assignment, but after our

second client consultation I felt more at ease understanding what CM Technology required from the project. Another area that was challenging was pouring through the massive amounts of research collected to accurately respond to their needs. As research lead, at times I had to analyze not only client data, but also multiple cybersecurity frameworks, risk assessment forms, and industry research all at once. It was daunting, but eventually I learned how to compartmentalize the information. If I could do the project over, I would make sure I get more clarity from the clients earlier in the process. This would have helped because initially the company felt bigger than it is but understanding that they were a conglomerate company helped to relieve anguish.

Goals from the MOA

The goals I set in my Memorandum of Agreement were all met and surpassed. These learning objectives were the following:

Practical Application of Classroom Learning

Practical application of classroom learning was achieved through utilizing the skills and tools received from speakers like David Price from CISA, Dr. Baaki lectures on design thinking, and CEO of Valor Cybersecurity Greg Tomchick's mentorship for the project. This helped me prepare myself for engaging with the clients and performing the work necessary to complete the assignment. In addition, the instruction and resources Professor Duvall provided were a blueprint to the process I had to use with CM Technology.

Collaboration and Communication in a Team Environment

Joshua Russell
CYSE 368
Teresa Duvall

This project relied on constant communication and collaboration from the team I was assigned to. Having to work as a cohesive team was crucial to success; no one person could have done all the work required for the project.

Exposure to Cyber Threat Intelligence

Through working with CM Technology, I was able to analyze data and identify potential vulnerabilities and threats, perform risk assessments, and evaluate potential impacts, and helped the clients to create an incident response plan to address and recover from attacks.

Understanding Industry Best Practices

Through extensive research into the clients, I had to learn and understand industry best practices that could be beneficial to the issues and concerns facing CM Technology. The assignment required additional research on incident response policies, cybersecurity training and awareness, and policies and procedures to reduce harm and mitigate threats. These were just a few of the recommendations outlined for the clients.

Research and Innovative Cybersecurity Solutions

Using NIST Cybersecurity Framework 2.0 was integral for the execution of this project. This industry standard helped to guide through the process of risk assessment, risk management, and creating the best solutions for the clients. Highly specialized compliance models such as Cybersecurity Maturity Model Certification (NIST 800-171), Contingency Planning Guide for Federal Information Systems (NIST 800-34 Rev.1), and the CISA Cross-Sector Cybersecurity Performance Goals (CPG).

Joshua Russell
CYSE 368
Teresa Duvall

Team Dynamics

I had a wonderful time collaborating with my team, Madison and Carla were the perfect teammates for this project. We had excellent communication and always gave each other feedback. The team dynamics in my group were solid; everyone had a role to play, and everyone put forth maximum effort. We were able to identify everyone's strengths and use them to our advantage in the process of executing the project. If we ever disagreed about something, we always made sure we came to a consensus. We treated each other respectfully, valued one another's opinions / ideas, and trusted in each other to complete our tasks. I feel that we worked hard, as a team, and the presentation showed that.

The Most Motivating / Exciting Aspect

The most exciting part of my CYSE 368 Internship was presenting the final project to the clients. I feel that the format gave me the ability to communicate effectively and have a productive conversation with the clients and faculty. It felt rewarding to fulfill the needs of the clients and have them be pleased with the results of the project.

The Biggest Challenge

As the research lead, the biggest challenge I encountered was parsing through an enormous amount of data and research. I wanted to provide the clients with the best recommendations and solutions that fit the needs of their organization. With CM Technology Inc. being a technology company operating in commercial and military spaces, they possessed a unique set of threats and vulnerabilities that required a combination of general and highly specific solutions. Organizing this research took a great deal of time and required a lot of work inside and outside of the class.

Recommendations for Future Interns

My biggest advice for future interns would be to take this clinic seriously; it is a job, and your client trusts you with sensitive aspects of their companies. Students should understand that the businesses that have signed up to participate in the clinic are seeking informed guidance and they value your opinions. Be flexible, adaptable, and respectful of their time. You are dealing with small businesses; many have limited resources and few staff members, so always consider their time. Keep an open line of communication with your clients; establish the best methods of contact for your clients upfront and always keep them updated, this will ensure they stay engaged. My final advice is to be prepared for your first client interview by doing prior research into the industry they operate in, and the listed concerns provided in the client form.

Conclusion

My main takeaway from this special section of CYSE 368 is that it is a great way for students to obtain meaningful experiential learning. The intersection of instructional lectures, industry mentorships, and interning with businesses allowed me to learn about frameworks integral to cybersecurity readiness and apply the information in a real-world setting. The hands-on approach helped to further develop crucial skills in risk assessment, research, communication, and teamwork. This clinic reinforced being adaptable, learning from challenges, and applying industry best practices which are essential for success. While this is my senior year, I have been accepted into the Master's Degree cybersecurity program, so I intended to take more classes in risk assessment and potentially add a concentration of risk management to my degree program.

Joshua Russell
CYSE 368
Teresa Duvall

Overall, I takeaway a meaningful experience that helped to shape my future goals in cybersecurity.

Future Career

This section of CYSE 368 has been beneficial to my future in cybersecurity, as it has opened my eyes to innovative ideas of what cybersecurity is. Risk assessment, analysis, and management are essential to ensuring that companies recognize the risks they face, how they can be exploited, and the steps they should take to close the gaps. Initially, I believed I wanted a career in penetration testing, but I think it would be highly advantageous to incorporate risk assessment, analysis, and management into penetration testing. By assessing the risks and analyzing their potential impacts, I would then be able to demonstrate, through penetration testing, how the threats and weaknesses are potentially exploited for gains by malicious actors. After which, I can provide organizations with the proper tools to manage the risks, reduce harms associated with them, and mitigate attacks against their assets. This clinic has helped me to see a future career that utilizes my technological skills, strengths in research and analysis, and my written and oral communication abilities.

Course Recommendations

Having taken CYSE 425: Cyber Policy, I already knew what the NIST CSF was and how it worked, but for a student who has not taken that class yet, it may be beneficial for more instruction on the framework. Other than that, I do not have any other recommendations for the clinic.