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Education is one of the most difficult and critical challenges in security and computer science. The first week after the schools locked down during the COVID-19 pandemic I spent time assisting with a class because I felt reassuring students was the most important and productive use of my time in that uncertain period. Obtaining the credentials to teach in higher education was one of the primary drivers for me earning my PhD, and motivation to keep going during difficult years.

Teaching-Relevant Experience

- Taught 3 sections, 60 students total, of Intro to Computer Science (Python) in Fall 2024 at UNC-W. Prepared and presented lectures and assignments using new and existing material

- Taught Discrete Mathematics at NCSU in Summer 2018. Prepared and presented lectures and assignments based on existing material for a 15 student course.

- Worked as a Teaching Assistant for an undergraduate software engineering course, an undergraduate senior capstone course, and a graduate software security course.

- As a substitute instructor, gave 2 lectures for graduate security courses and 2 lectures for an introductory computer science course (Java), based on existing material

- Mentored 5 undergraduate researchers

- Assisted in the NCSU Cybersecurity Awareness Data Privacy Checkup leading a small group of students, faculty, and staff in reviewing and updating privacy settings

Teaching Philosophy

There are several principles that I find helpful when working with students. These principles are only the beginning. As I explore new opportunities, I am always looking for ways to improve as a communicator and educator.

Engage: Engagement through activities, even simply encouraging students to come up and write the answer to a question on a whiteboard, is key to encouraging student learning. Trends such as "active learning" have made it even easier to find ideas for how to integrate student interaction into lectures.

Explain Why It Matters: As with a good research presentation, a good lecture helps the students understand why the material is important. Expecting students to pay attention when they may not know why they should do so is unreasonable. Explaining the importance of concepts is important to ensure students understand why they need to learn the material presented, both in the classroom and in the lab.

Assume Little or No Background Knowledge: From classroom lectures to research mentoring, it is important to avoid making assumptions about background knowledge. Even when a prerequisite covers some background knowledge, highlighting key terms that students can review may be helpful, as some students may have forgotten or never fully understood the

concepts to begin with. No student should be left behind because they come from a different background, both in terms of their previous knowledge and more broadly.

Offer Multiple Perspectives: I do not know everything, and I will not always be able to convey information clearly to all students in a lecture. When possible, it is important to provide students opportunities to review the material from other perspectives. Background reading, asking guest speakers come in, linking to relevant youtube videos, and having students work in groups or do peer evaluations can help students better understand the material. Similarly, using a diverse range of examples and many types of activities improves the odds that most of the students in the class will be able to connect with the material.

Connect with Industry: Bringing in examples and relevant material from industry helps prepare students for their careers and helps teachers engage with students. For example, blog posts from industry experts may be easier to read than academic papers and can help students understand how concepts are applied in the real world. In addition to bringing my own industry experiences to teaching, I hope to find ways to bring in other industry professionals with more recent and relevant experience to discuss suitable topics.

Build Community: While we often think of "community" as a group of people we are close to, building community begins with simply ensuring students feel welcome in the classroom. Trying to place students in groups that they will get along with and be able to rely on.

Looking Forward

Particularly in security, computer scientists often decry "the human factor" as the weakest link in computer systems. While I do not know the answer to this problem, I cannot think of a better place to start than with computer science education. I am interested in teaching computer science basics, as well as software engineering and software security courses at all levels.