Philosophy. I believe one of the important roles as a teacher is to guide a student to find a strong motivation for study. During undergraduate or graduate studies, students take many different classes and they may wonder how certain knowledge taught in the class would be applied in the real world or useful for their future couriers. As a teacher, by introducing them how the class materials are related and used in practice, I believe students can self-motivate for study.

Teaching Experience. As an undergraduate student at POSTECH, I was leading the undergraduate hacking team, PLUS. One of my job as a leader was to teach various computer science and computer security related subjects to junior students: from basic C/C++ programming to core mechanisms of complex computing systems like the Linux kernel. One lesson I learned from this experience is that many students perform better if they are given very specific goals and tasks, and initially those goals should be simple enough so that all students can follow up and do not give up. The other lesson I learned is that students can perform better if they are under competition like settings: even if the given problem is very challenging, once one of their peer student was able to find a solution, other students better find a motivation and strive to solve the problem. Moreover, our team actively participated in CTF competitions (i.e., a hacking competition), which we gained several outstanding results including world-class competitions such as DEFCON CTF. I would like to incorporate these lessons into my class. In particular, I am going to design an online problem solving platform, that is similar to well-known ACM programming contests. In this platform, students submit their own code or solutions, and the system automatically evaluate it and provide the live score board for them to check their standings. I believe the true benefit of this setting is not only in helping students to better understand the class subjects. This game-like setting would be really fun to play with, thereby inspiring the self-motivation to participate the class. In addition, I would like to share these exceptional and fascinating experiences with future students, and further want to help students to organize such an undergraduate hacking team if possible.

At Georgia Tech, I was a teaching assistant for two classes: (1) the introduction to information security and (2) topics in building secure systems. I have also guest lectured for several security related classes in Georgia Tech as well. From these formal classes, I found that students appreciated the class if it involves practical security subjects that how commodity systems encountered and thus addressed previous security attacks.

Courses and Teaching Plans. I am interested in teaching any class on computer security and privacy to undergraduate and graduate students. I can also teach the graduate level of advanced security classes such as system security, software security, web security, etc. Other than security related classes, I can also teach the undergraduate level of operating systems as well. I believe one of the most effective way to learn computer systems related classes are by working on heavy programming assignments under a principled guidance. To this end, I would like to design a class with strong programming assignments under the following considerations. First, in order to attract student’s interests, all of these assignments will be based on commodity computer systems. For example, there are numerous security hardening techniques deployed in the Chrome browser (e.g., several sandboxing techniques, XSS and CSRF prevention, or memory corruption prevention techniques) and I would like to design a programming assignment implementing such techniques. next, more importantly, I will be providing easy-to-follow base infrastructures that all students can easily follow with reasonable efforts. I believe this can allow students to focus on core ideas and implementation challenges that would eventually maximize learning effectiveness.

Mentoring. I have been fortunate to mentor several talented undergraduate and graduate students from Georgia Tech (one undergraduate and three graduate students) as well as other institutions (one undergraduate student at POSTECH and two graduate students at KAIST). As many students struggles to find a good research problem, my mentoring was mostly focusing on helping them to approach a problem like a researcher: what are the research challenges and contributions, or how to setup a feasible research goal to address the challenge. In addition, when students have engineering related issues (either design related issues or specific bugs), I helped them to get through by discussing or checking the details together.