

Teaching Philosophy

Arsalan Mosenia (arsalan@princeton.edu)

Undoubtedly, teaching is a fundamental component of an academic career and extends far beyond delivering knowledge to students. Although teaching fundamentals from standard textbooks may have priority at the early stages of undergraduate education, I strongly believe that neglecting students' creativity and curiosity can weaken their problem-solving ability, and as a result, cause significant productivity loss for both industry and academia in the long term. I will always appreciate my students' ideas, encourage them to ask questions prompted by their curiosity, and guide them to think and construct knowledge for themselves. I will always seek feedback that helps me enhance my teaching skills and actively strive for building a friendly relationship with my students.

Teaching Principles

Serving as a Teaching Assistant (TA) for different courses, mentoring several graduate/undergraduate students, and attending various teaching workshops/seminars have offered me an immense opportunity to form my teaching philosophy based on four fundamental principles:

1. Bridging theory and practice: Forming a solid theoretical background is essential for training successful and productive students. However, dwelling on theory alone is not sufficient for guiding creative students. My TA experiences taught me that it is extremely challenging to encourage students to learn theoretical concepts without demonstrating their vital role in real-world applications. I observed that students learn more efficiently and effectively when they work on assignments/projects related to the course material.
2. Encouraging active engagement and teamwork: I believe students' participation in class activities and discussions enhances their interest, makes material more vivid and concepts clearer, and provides invaluable feedback to the instructor. I will strongly encourage my students to form small groups and discuss topics and material explained in the class. Furthermore, I plan to design both in-class and take-home collaborative assignments for which students need to actively discuss and collaborate with each other during the whole semester.
3. Balancing friendliness and fairness: Once students feel the teacher genuinely cares about their success and well-being, they will begin to respect the teacher's commitment to their education and growth. I believe that the teacher must build rapport with the students, continually express his concerns for their welfare and success, and help them learn from their mistakes, while maintaining professionalism and fairness.
4. Familiarizing students with recent research findings: I strongly believe that familiarizing students with recent research findings and important research challenges, even at the undergraduate level, is highly beneficial since students are more motivated to learn when they understand the relevance of class material. At the undergraduate level, I would like to provide a brief overview of the research related to each topic discussed in class, and then encourage the students to conduct arbitrary short literature reviews. I plan to offer generous additional credits to increase their interest. At the graduate level, I will give a high priority to reading recent papers published in top-tier conferences/journals and writing research proposals. I would like to conduct one-on-one or group meetings with the students to give them feedback about their ideas and monitor their progress.

Teaching Experience

During my graduate studies at Princeton University and undergraduate studies at Sharif University of Technology, I was given several opportunities to serve as a TA and guest lecturer for various Electrical/Computer Engineering and Computer Science courses.

Princeton University: During my graduate studies, I served as a TA for three courses:

1. Information security (Prof. Mittal): I served as a TA for an advanced information security class, where I suggested improvements to the curriculum and assignments, which have since been incorporated into the curriculum. This course offered a solid background to students who were willing to start their research in the area of information security. It covered several fundamental topics in information security, e.g., basic cryptology, privacy, common security issues/requirements of different systems, and electronic commerce. As an invaluable experience, I learned how a research-oriented course can be taught in a very understandable and enjoyable manner. During this course, in addition to designing and grading weekly assignments, *I mentored two graduate students and helped them with their research projects.*

2. Contemporary logic design (Prof. Malik): This course provided an introduction to basic concepts in logic design that form the basis of computation and communication circuits. Serving as the TA for this course enabled me to understand the special needs of early-stage undergraduate students, and let me obtain essential experiences needed for managing large classes. *I had the opportunity to actively collaborate with other TAs to prepare and grade weekly assignments and midterm/final exams. Further, I was responsible for one session of weekly labs during the semester.*
3. Embedded computing (Prof. Jha): This course offered an introduction to embedded computing and covered several topics, including cyber-physical systems, Internet-connected embedded systems, reliability, availability, power/energy consumption, and security. During my office hours, I helped both undergraduate and graduate students with their course projects. Moreover, *I supervised several students and held additional one-on-one meetings to discuss their projects, novel ideas, and progress.*

Sharif University of Technology: I was honored to be among a few undergraduate students who were given the opportunity to serve as a TA for both graduate/undergraduate level courses. During my undergraduate studies, I was a TA for three courses:

1. Electrical circuits (Prof. Jalili): This course offered the essential knowledge for first-/second-year Electrical Engineering students, who needed to quickly learn the basic theory of electrical circuits. It provided a comprehensive introduction to design and analysis of electrical circuits. *I was given the privilege to supervise other three TAs, design two midterms and the final exam, and present several lectures in the class.*
2. Computer architecture (Prof. Asadi): Computer architecture is one of the fundamental courses in Computer Engineering Program's curriculum of Sharif University and discusses different schemes and rules that describe the functionality, organization, and implementation of computer systems. At Sharif University, only a small fraction of students, who have shown a superior performance in a variety of courses, are given the chance to serve as a TA for this course. I, along with other three TAs, had the responsibility to design weekly assignments and three course projects and also manage weekly labs. *Furthermore, I supervised ten three-member teams and helped them develop their own original ideas for the final project.*
3. Theory of languages and automata (Prof. Movaghar): This course presented introductory material on the theory of computation, including, but not limited to, fundamentals of formal languages, automata, and computability. The course was designed for both graduate/undergraduate students and had a large class size. *As the head TA, I was responsible for supervising other TAs, designing midterm exams, and grading weekly assignments.*

Teaching Preferences

My core expertise includes information security, Internet of Things (IoT), embedded systems, and applied machine learning. I would be interested in offering courses focused on these areas for both undergraduate and graduate students. Furthermore, I can teach a variety of other courses, in which I can exploit my background in Electrical/Computer Engineering and Computer Science. I will commit my utmost effort and meet the challenges necessary to teach my students the essentials needed for targeting the most challenging academic or engineering careers with high confidence after graduation.

At the undergraduate level, I can teach a broad set of courses that cover both theoretical and applied aspects of Electrical/Computer Engineering and Computer Science, including, but not limited to computer architecture, electric circuits, logic design, signal processing, algorithm design and analysis, data structures, introduction to cryptography, introduction to programming, introduction to applied machine learning, and fundamentals of information security.

At the graduate level, I could teach an advanced information security course. I will utilize my TA and research experience to cover recent trends and emerging security and privacy challenges. I plan to cover a wide range of topics including cryptographic protocols, network security, authentication, security protocol design and analysis, key management, biometrics, web security, and IoT security. Besides traditional courses, I am interested in developing and teaching an interdisciplinary seminar course on IoT security. In addition, I will strive to teach graduate students writing and presentation skills that will help them secure highly-competitive industrial and academic careers.