

## Teaching Statement: Education Benefits Everyone Involved

Michael D. Shah

[MichaelDShah.net](http://MichaelDShah.net)

I believe education is one of the most self-fulfilling human experiences where everyone who participates benefits. As a teacher I enjoy the challenge of understanding material from students who have a variety of backgrounds, and this strengthens the way of how I think. Below I describe my experience, how I think about teaching, and some of the courses I would be excited to have the responsibility and privilege to teach.

### **Previous Experience:**

I have experienced teaching through tutoring sessions, holding office hours, coursework, workshops, computer laboratories environments, teaching large and small lectures, and mentorship with both undergraduate and graduate students during my higher education.

As an undergraduate I began as a teaching assistant for Programming Languages and Data Visualization. I sought further opportunities to teach by engaging in teaching once a week for three of my four undergraduate years' 3D modeling and animation and web programming courses. It was crucial when applying for Ph.D. programs, I knew I would be able to continue developing my teaching skills. During my Ph.D. I have served as a teaching assistant for: Introduction to Data Structures, Algorithms, Operating Systems, Concurrency, Computer Game Development, Computer Graphics, and Human-Computer Interaction.

As part of my teaching duties, I have prepared homework assignments, in-class lab assignments, exams, held office hours, mentored students one on one in research projects and helped in course design. I have worked together and independently with Professors to restructure their course by creating new course material. An example of this is when I updated our computer graphics course to invert our lectures and have 10 in-class lab assignments that I could supervise and engage directly with students.

I helped implement a new course (Game Development), which had never previously been taught at Tufts until I worked with the department head and my advisor Sam Guyer to hire an adjunct faculty. An outcome of this is that the course is now thriving as a part of a two-sequence game development curriculum. In addition to adding new relevant courses in emerging fields, I am also in process of updating our concurrency course, to also include a four-week parallelism lecture series with fundamental and pragmatic computer science materials students can use when they enter the workforce.

**Teaching Philosophy:**

I believe that education does not exist only in the classroom, and by helping students achieve their goals in the classroom, they will take that excitement and curiosity into the world and apply their skills. Courses that have heavy programming components, need to have in-class components where students can work together and have the instructor and teaching assistants available.

Teaching for a variety of classes has showed me that different courses must be structured to fulfill students learning of the material. As an example, I have run several series of programming workshops for non-programmers which serves as a reminder to always be thinking about who my audience is, and how to target material that can be effectively learned from.

I make assignments and perform lectures using examples that explain why the work is relevant to students learning the material presented. Students must be able to engage in hands on experiences in computer science, so that they retain the information. As a lecturer, I engage students by building in questions during my lecture at rapid intervals, and encourage small group discussion. During lab assignments, I will often pair students together, so they can practice pair programming.

I believe being part of a Computer Science Department means technology is also important to be utilized in the classroom. My previous experience with using online course management systems has been useful in providing students feedback much quicker. By providing quicker feedback, I can find students who are struggling with material, and arrange to help them much earlier in the process.

I believe in having positive learning interactions with students inside the classroom so they feel ready to continue learning outside of the classroom. Inside the classroom, learning student's names as soon as the first day of class is fundamental. I believe in establishing trust with students by being organized and transparent about what materials they are expected to learn, but also allowing creativity for students to expand on the material that engages them the most, especially when they bring it forth on their own initiative. A classroom is somewhere where I believe is a safe space for all students to learn, fail, retry, succeed, and express and develop new ideas in computer science. I believe in mentoring students and creating opportunities for them to continue pursuing topics they are passionate about. This includes making myself actively available to students for directed studies or to serve as an advisor and mentor for materials that sparks their interest.

**Plans for future:**

As a Professor, I would like to teach concurrency and parallelism courses as that is where my research is focused. In addition, I would like to teach other courses that rely on performance and creativity such as Computer Graphics. My previous experience in these areas gives me a large depth of knowledge I can pull from to build courses to fit with this universities current curriculum. It is also important for me to teach a data structures course, as I think it is important to have an understanding at a University where a student's foundations are as students take the other courses I have listed.