

TEACHING STATEMENT

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The opportunity to teach is a crucial factor in my decision to seek an academic position. I believe as a professor I would have the primary responsibility to educate students to become well-rounded, independent-minded thinkers. I aim to conduct a teaching program with the objective of preparing students for productive careers of their own choice, possibly as educators and researchers in their own right, but certainly as decent, hard-working contributors to society.

Background

I have accumulated the expository skills, patience, dedication, and deep motivation to pursue a teaching career. I have formal teaching experience as a graduate student at the University of Illinois and as a post-doctoral researcher at the Technische Universiteit Eindhoven. Even as an undergraduate student, I participated in study groups where my responsibility was to share my expertise with my peers. I have been most profoundly influenced by the wonderful professors I studied under, some of whom have won teaching excellence awards. I plan to pursue a similarly rewarding and satisfying academic career.

In my first year of graduate school, I taught two programming laboratory classes attended by graduate students in engineering and other departments at the University of Illinois. I had complete responsibility for the entire course and my duties included giving lectures, designing and grading programming projects, and assigning final grades. One student told me how her two young children enjoyed playing the computer game she programmed as a class assignment. Students commented that I was one of the most accessible instructors they had, because I responded quickly to their questions by email. In my second year, I was a Teaching Assistant for the two hardest theory classes offered by my department.

In 2005 and 2006, I assisted in teaching a graduate-level seminar course on IO-efficient algorithms at the Technische Universiteit Eindhoven. I conducted office hours to meet with students, advised students on course material and research papers, and helped them present the content in a class presentation.

I have experience of the vastly different educational system in three countries – India, the US, and the Netherlands. My experience both as a student and an instructor in such different environments gives me a good understanding of the different ways in which students from diverse cultural and educational backgrounds learn, and the various pedagogical techniques that can be effective (or ineffective!) for different audiences. I will aim to bring an international, multi-cultural, and eclectic approach to teaching and mentoring my future students.

Philosophy and Implementation

My philosophy is to foster a sense of intellectual curiosity and open give-and-take of ideas in my students. I aim to create a class atmosphere that encourages students to think creatively and differently, and share their ideas in a relaxed and lively group discussion. As a student, I found that students learn as much from interacting with each other as from listening to lectures. I will strive to motivate undergraduate students, who I recognize are sometimes overloaded and exhausted, by highlighting the relevance of the course material to practical problems as well as connections to the content of their other courses. Since enthusiasm for a subject can be contagious, I will encourage smart, dynamic students to work with other students in the class and to take leadership roles in small groups.

I believe that traditional lectures are ideal for the professor to convey the key fundamental points concisely, emphasizing the broad view of the subject. Classroom lectures must be followed by individual and group assignments to encourage students to discover subtleties on their own, with assistance during frequent office hours. I plan to follow an open-door policy to encourage students to ask questions on their own initiative and schedule. I am open to a variety of teaching methods, such as brainstorming in small groups, using multimedia and online forums, and inviting guest speakers to lecture on their specialized topics, some of which I have tried and found to work very well. I hope to continually improve as a teacher and mentor by learning from my senior colleagues as well as from my students. I am willing to make the effort to engage a student who may feel intimidated by the prospect of participating in class. I am happy to schedule extra meetings to review class material with students in need of help, to encourage them to meet with teaching assistants, and to point them to other resources on campus.

I would definitely encourage students to pursue research problems that are naturally encountered in their course work. I think it is important to formulate well-defined open problems that are approachable and tractable, and I encounter such problems sometimes in areas of my research interest. I will use some lectures as a starting point for introduction to current research in the topic of the course. I will encourage students to pursue their ideas during independent study and out-of-class discussions. I think I can excite even less-motivated students about the idea of doing research by presenting a problem as a puzzle-solving challenge and by encouraging friendly competition. I believe I can thus convey my excitement about doing research even to students who are just beginning their investigations and looking to build their self-confidence.

I expect to inculcate a sense of fairness and integrity in my students. The Internet provides free access to online resources, and I would use it to ingrain in my students the habit of reading widely and analyzing critically. I plan to extensively use online discussions, blogs, and newsgroups for positive collaboration between students and to get frank feedback from them.

Courses

I plan to use my training in theoretical computer science and combinatorial algorithms as well as my experience with engineering applications to inculcate in my students a lively interest in both theoretical and applied subjects. I am interested in teaching courses that feature a good mix of theoretical study as well as programming projects with educational and practical value. I would enjoy teaching undergraduate courses in algorithms and data structures, discrete mathematics, computational geometry, and mesh generation as well as advanced courses on topics of current research interest to senior undergraduates and graduate students.