Evdokia Nikolova
Ph.D. Candidate
Massachusetts Institute of Technology

TEACHING STATEMENT

My training and research expertise lie in the areas of Theoretical Computer Science, Optimization and Economics. As a faculty member, I am prepared and would enjoy teaching undergraduate and graduate courses in a wide range of areas: including diverse topics in optimization (eg. combinatorial, linear, nonlinear and convex analysis and optimization), probability, theoretical computer science and game theory.

Teaching experience. As the daughter of a life-long high-school teacher of mathematics, my first professional aspirations were to become a teacher. I was fortunate to discover my love and appreciation for teaching very early on—while tutoring mathematics to fellow students in middle-school and high-school. During this first formal experience in teaching, I developed an understanding of the differences in learning styles among students and I felt very rewarded as I was able to tailor my teaching style to every individual student.

As an undergraduate, I served as a teaching assistant for several undergraduate courses, including "Introduction to Algorithms" and a mathematics course on "Functions and Graphs". My responsibilities included teaching weakly recitation sessions, designing and grading homeworks and exams. My students ranged from undergraduates to adults with very diverse mathematical backgrounds. The transition from my earlier experience with one-on-one tutoring to teaching weekly recitations for these courses was challenging: because in a class, I had to speak in one voice to all students, unable to adapt my explanations of concepts and proofs to the individual levels that were best fitted for them. This is inevitably a challenge for every teacher addressing a roomful of students with diverse backgrounds and aptitudes for learning—and there is no easy solution.

As a graduate student, in addition to being a teaching assistant for the "Game Theory" course at MIT EECS, I had the opportunity to give several guest lectures. While lecturing, my style is to pay close attention to the (often silent) reactions of students to what I say: I look for cues and facial expressions, as well as answers to frequent questions, as a way of testing whether I am successful in connecting with my audience. Grading assignments, exams, as well as soliciting direct feedback is also an invaluable way of being on top of the needs of individual students and my overall teaching effectiveness.

Teaching style. I have enjoyed teaching for every single course I have assisted. The undergraduate and graduate courses have been rewarding in distinct ways: teaching fundamental material offers an exciting opportunity time and again to develop the appreciation of "newcomers" for scientific concepts that our research profession as well as a number of real-life applications build on. An advanced course on the other hand often presents an opportunity for a dialogue and mutual learning experience that also gives me, the lecturer, an exciting new look at the corresponding material.

Some of my first role-models were my own high-school and college teachers of mathematics. I admired the clarity of their lecture style, the detailed writing and beautiful organization of the material on the blackboard, the carefully chosen problems to spark the students' attention while also conveying the course material. As a theorist, I believe that it is crucial for every student to learn to construct and write proofs, and the best way to teach this is by example. However I recognize that I would also be teaching students with more applied interests: for those I intend to spark the interest in theoretical concepts with numerous practical applications. I will continue following a similar teaching style as my role-model teachers, by carefully combining detailed presentation of concepts with higher-level overview of their importance.

Mentoring and Advising. In addition to my early tutoring experience, as a graduate student I have had the opportunity to mentor several students in research (from the very competitive "Research Science Institute" (RSI) program for high-school students that takes place every summer at MIT). Since I have myself benefited enormously from my mentors and advisors, I look forward to imparting my own advice and care in ensuring that my students would find rewarding and fulfilling career paths.