

# Teaching Statement

Cristian Lumezanu

My teaching philosophy and skills have been shaped by past experiences as student and teacher. I have taken advantage of many opportunities to teach. I was teaching assistant for introductory computer science and networking courses as well as for graduate computer networks. I also served as instructor for the Cisco Academy in Bucharest, Romania, where I taught students how to install, configure and operate networks. Outside the classroom, I informally mentored students, both as a graduate student at University of Maryland and as a postdoctoral researcher at Georgia Tech.

My goal as a teacher is not only to impart knowledge, but also to inspire in students interest and passion about the material. I discovered two effective ways of achieving this goal: by structuring lectures in a *top-down* approach, using familiar examples to capture interest and questions to guide the discussion, and by making courses *hands-on* through experiments and projects. I describe these principles below.

When presenting a new algorithm or concept, I always start with the “big picture” and use examples and concepts that the student already knows. I then slowly narrow the scope of the discussion with simple, directed questions, intended to stimulate critical thinking. By relating to familiar examples, students feel more comfortable and understand the relevance of the material better. By frequently asking questions, I make sure that they are following the material and allow them to come up with the solution by themselves. This approach has worked well. I especially remember the invited lectures about network coordinate systems that I gave in the graduate computer networks classes at Maryland. Class participation was always high and feedback from students positive. A most gratifying aspect was when students would choose network coordinates as the starting point for their class projects, thus extending our collaboration beyond the classroom.

Computer science courses should combine the teaching of principles and theory of computers with the development of practical skills. Hands-on experience is essential in understanding the concepts being taught. I often understood better an algorithm once I implemented it for an experiment or project. Further, blending theory with practice puts students face-to-face with problems that arise when using, implementing or debugging real systems. For the ones that consider graduate studies, it provides a useful transition to further research. In retrospect, I first realized the importance of practical experience while I was an instructor for the Cisco Academy in Bucharest. I taught students and young professionals basic networking concepts as well as the skills necessary to configure and operate real networks. My students were always more passionate and interested whenever I asked them to apply in practice what they learned (*e.g.*, by setting up a network of routers in the lab, configuring routing protocols and debugging them).

As an advisor, I will place great value on thoroughness in doing research. I believe that each step in the research methodology is equally important: reading papers to identify open problems, formulating the right hypotheses, testing and validating them, designing and implementing working prototypes from new concepts and ideas. I will encourage students to be creative and independent thinkers, but I will make sure they keep the end goal in sight and are not sidetracked by irrelevant problems. My ultimate goal as an advisor is to teach my students how to be excellent researchers.

I am prepared to teach undergraduate classes in all aspects of systems, from networking and security to operating systems and programming languages. At graduate level, I would relish teaching classes in networking and security, but I am eager to learn about a new field by teaching a graduate seminar in that area.