

William Mullally's Statement of Teaching Philosophy

Computer science is a constantly evolving field in which demand for specific skills changes with the cutting edge of computing technology. The core of computer science, however, consists of the ideas that can be adapted to meet the needs of any new application. Students must be taught both the specific programming skills and languages which meet the needs of current industry employers as well as the underlying structures, algorithms, and analytic techniques with which they can engage the dynamic world of computing. Any computer science class, whether it is an introduction to programming or a class on artificial intelligence, should focus both on abstract principles and on solving concrete problems.

I have experience teaching classes in data structures, image processing and computer vision, artificial intelligence, and computer graphics. I am confident in my ability to teach a wide variety of courses on other topics in computer science, mathematics, and engineering including: programming, algorithms, databases and data mining, discrete mathematics, probability and statistics, statistical learning, medical and biomedical imaging, signals and systems, scientific computing, and computational modeling. I look forward to developing new classes and revising existing courses to keep them current with the evolving standards of the computing industry. My research interests and experience in medical imaging has placed me at the forefront of some amazing emerging technologies. I want to give students the same foundation in computer science so they are motivated and able to contribute at the highest levels of the field.

My responsibility as an educator is not merely to present ideas, but also to engage students in the course, to encourage their understanding and mastery of the material, and to challenge their intellect. As an instructor and teaching fellow, I balance these responsibilities and achieve my teaching goals using a wide range of instructional tools. In lectures, I develop ideas on the blackboard and use a projector to present detailed or dynamic content. I encourage active participation by asking questions and proposing problems for students to solve in small groups. I try to motivate students by connecting the lecture to everyday life. I like to point out why specific topics are important not only in the context of the course, but also in the context of other courses students may take and in jobs they may pursue.

I believe most students learn more outside of the classroom than they do inside of one. To fully understand the subject matter, students cannot just listen to me in class. They must apply the ideas and algorithms I present in the lecture and reading materials. I construct substantial written and programming assignments to encourage students' development of analytical, programming, and writing skills. Students will rarely work alone once they leave academia, so I encourage collaboration on many assignments.

Because these assignments can be very involved, I find some students need significant support outside of the classroom. One on one contact is important for the success of many students. In addition to allowing me to give targeted guidance, one on one sessions give me the opportunity to pinpoint where many students are struggling with understanding the material and often provides insight on the kinds of examples and analogies students will connect with in the classroom.

Like material in any course, teaching is also a skill to be mastered. I strive to improve my abilities as an instructor. I look for feedback from students and advice from fellow teachers. I have and will continue to seek out professional resources for developing my teaching abilities.

I have found teaching to be a rewarding experience. It is a pleasure to share material that I find exciting with new audiences. Teaching both encourages and helps me to deepen my understanding of computer science. By reviewing and reevaluating material in preparation for class, I continually improve my own grasp of the principles and techniques I am teaching. With insightful or surprising questions, students can challenge me to think in new directions. I look forward to the future classes of students whose skills and interests I can help develop.