Statement of Teaching Philosophy

Tian Zheng
Department of Statistics
Columbia University
New York, New York

My current teaching philosophy has four components: encouraging creative and critical thinking, opening as many channels of communication as possible, motivating students through illustrative examples, being ready to accommodate--interactive teaching.

Encourage creative thinking. The undergraduate course, W1111, which I have taught 5 times and am teaching, does not require much mathematics background. Even the sigma–summation notation can scare more than half the students (given that the more quantitative eco majors have started taking W1211, the proportion of math-phobias have become bigger). At the same time, a typical Columbia undergraduate takes 4-5 courses and with 5-10 hours weekly extracurricular activities, which do not leave them much drive for spontaneous after-class reading and digesting. To inspire them, I bring to the class examples from news and other media and encourage to challenge the correctness of such example. I also put a great emphasis on “getting your hands dirty” in the data-collection project. I encourage students to start with something they are truly related to, interested in and curious about, and then develop a project topic from there. My w1111 students have studied much more interesting topics (such helping behavior, size of local social networks, etc) other than the notorious popular past choices (such as GPA, underage drinking).

For the master-level course, W4315, I encourage the students to comprehend the mathematical derivation and properties of the methods so that they can think about the methods critically.

Open channels of communication. The first thing I always build up at the beginning of semester, between my students and myself, is communication. Theoretically, it is best to resolve students’ questions and confusions as soon as possible. For both courses I have been teaching, the class size is always very large. Thus, it is not always possible to address the questions of all the students during lecture. I always hold part of my office hours in the classroom of my lecture right after each lecture. This way has resulted in some really in-depth discussion about the lecture materials. Some students even choose to stay and listen to other students’ questions.

In our time, email has become a major way of information exchange. I try my best to reply to students emails as soon as possible so that they know I am reachable outside classroom when they want to study statistics and encounter some difficulties. To make the email communications under control, I maintain, to my best, an informative website for my class. Most students can resolve their questions through a visit to the class website.

Communication is like an invisible link between the instructor and her students, and the tighter the link, the more will it enhance the teaching and benefit students.
Illustrate the beauty of statistics. Even though statistics is regarded as a close relative of mathematics in the eyes of the general public, it is much more than the mathematical formulas and numbers used in the calculation. The reasoning and logic are what make statistics unique. For most of my students, my course was their first time studying statistics (even for the master students. Surprising considering the pre-requisite, isn’t it?). To begin each new subject, I use analogy and real life examples to lead the students to the reasonability of the method. It happens that when you talk about the logic of some methods we are ourselves so familiar with, you find yourself facing a classroom of confused faces. I always try to slow down and use diagrams or some humorous illustrations to explain the concepts again, something they can remember and smile at. Due to the widely usage of computing facilities and the advanced developed statistical software, after the final exam of this course, the students may not need to calculate a t-test by hand again in their life, but understanding the meaning of a p-value will continue to be quite useful to them for a long time.

Interactively teaching—student-friendly. “No lecture notes can be used unchanged from one semester to the next, nor is it best to use the same examples.” I wrote the previous sentence three years ago and I am still standing next to it.

Students are different and their ways of developing understanding too. I believe an instructor should always be ready to adjust her lectures due to the needs of her current students. If a proportion of students complain about the calculation, a drill example may become necessary; if there is one tricky problem in the homework, give some little hint will make the students’ efforts more efficient; if the material to be covered has a dull nature, add some interesting examples may lighten it up and make the lecture hour more enjoyable and less slumberous. Two lectures per week is not much time for lecturing or studying statistics, giving them what is important and what they need badly is the way to make the best out of the time.