

Teaching Statement

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Philosophy

The purpose of education is to prepare students to be independent learners and curious thinkers. Whether the student stays in science or ventures into the job market, self-motivation is an endearing quality that will open doors in life. A student with a disciplined and motivated mind will be able to uncover his or her interests, be resourceful when challenged, and have the freedom to learn independently.

Participating in such mentorship as an educator is a privilege, but also is a big responsibility. The tutelage from teachers and scientists, in China, Japan, and the US who encouraged and supported me has profoundly shaped me as an individual. Using my past teaching experience as my foundation, I hope to continually explore and learn methods of teaching and advising to pass on what I have learned to the next generations.

In-class teaching

In my lectures, I plan to put emphasis on basics and advanced materials, but encourage students to independently master the contents in between through active learning sessions, homework, and office hours.

Example: When I taught at the math support center as an undergraduate at Cornell University, a student brought in his homework problem after his first class. It was an elementary differential equation, which I myself had only learned one day before. After showing him how to solve it, he looked very disappointed and told me that he was not ready to take the class. *A simple math trick should not be the barrier of entry for a course that interested him.*

Deep understanding in basics is the base for all advanced learning. My in-class instruction will motivate, and emphasize the conceptual and technical basics. The classroom will provide an opportunity for students to internalize the material at their own pace. For example, in order to build such a classroom, I will provide a problem-oriented lecture (see Figure 1) where a *sample problem* (with a table-top demonstration when available) will be given to students in the beginning of class for motivation. Half of the lecture will be built upon concepts and methods to solve this problem. This *sample problem* will then be *Problem 1* of the homework.

When students have mastered basic concepts and are ready to explore, I plan to extend their confidence and interests in the other half of the lecture. I will show how the basic concepts they have learned can be applied to advanced problems, including ongoing research topics in related fields.

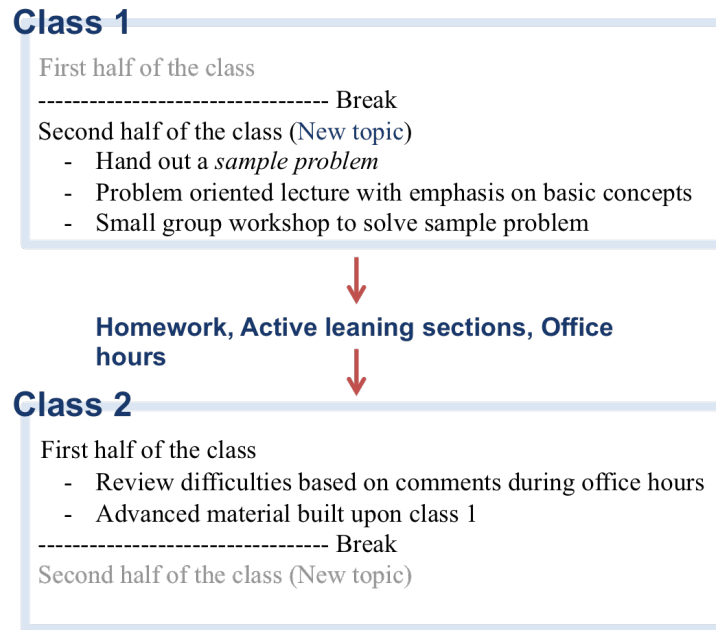


Figure 1: Sample class flow

Course preparation

I believe course preparation is at the heart of teaching. When I design a class, I will emphasize on having a continuous transition between the prerequisite classes and the classes that follow. To encourage independent exploration, apart from the main textbook, I would like to provide list of other books and research articles to read, including the possibility of Youtube videos. My lecture notes will be available to students before the lecture from the class website. Being a TA at UIUC, my Ph.D. institution that has a strong physics education research program, I have learned that physics education is a subject of active research. As a scientist, I would like to respect up-to-date teaching methods that are statistically proven to be effective. I will modify my lecture material each year to reflect these studies.