TEACHING PHILOSOPHY

For me teaching is great fun and hard work. It is trying new approaches and continuously revising to more effectively guide the students. It is constant reassessment, updating, and adjustment of both the content and presentation, searching for a more effective way to challenge my students to achieve their full potential, to encourage them to thoroughly learn fundamental concepts, and to develop their skills at designing, writing and documenting software. It is the joy of seeing the best students excel, seeing the pride of the average student in completing a term project that is longer, more challenging and better crafted than they thought possible, and seeing the satisfaction of the lesser student persevering when they thought they couldn't make it.

I start by telling students: "Never confuse the finger pointing at the moon with the moon itself." A teacher can only point; learning is done entirely by the student. To learn how to swim you simply must log many, many laps in the pool, swallow a lot of water, and get a lot of chlorine in your eyes. There is no other way - no shortcut.

During each class I lecture but I also throw the students in the pool and coach them while they swim laps. Active learning is an essential component of every class. Sometimes it is as simple as peppering a lecture with questions thrown out to the class - questions that depend not just on recall of factual material but require the students to apply, analyze and evaluate the material. Many of these in-class exercises are done collaboratively by teams of four students that submit one team solution. By assigning teams with students who have a mix of abilities and experience, I end up in effect deputizing numerous coaches - virtually every team has at least one "lead" student who can explain the concepts to the others. Not only do the weaker students benefit, but the bright students more thoroughly master the material through explaining it to others. Work in teams is also good preparation for the real world. In industry, how often does a supervisor come to an employee and say: "Here is an important problem. You have 50 minutes to solve it. Don't open any books, and by all means don't talk to anyone else about it." The end of the semester course evaluations show that teams are judged by the students to be a valuable learning experience.

Throughout a course I use a variety of teaching approaches to reach students with different learning styles. Some students learn best from visual presentations (pictures, diagrams, etc.) and others from verbal explanation. Some are sensors who respond best to what is seen, heard and touched while others are intuitive learners (ideas, memories, possibilities). Inductive learners build the big picture out of examples while deductive learners take a principle and deduce the consequences. Not all students learn most effectively the same way I learn. Since there is a natural tendency for me to teach in the way that I could best learn the material, I make a conscious effort to vary my presentation and teaching techniques to "connect with" as many students as possible.

Before a course begins I explicitly and as precisely as possible state the instructional objective of the course. One component of this is stating exactly what the student will be able to do at the completion of the course. This becomes a contract between the student and myself; the student knows just what to expect, and I know what material to include on test and assignments. These goals are repeatedly communicated to the students so that throughout the semester they know where the class is headed, why we are covering each topic, and how it supports the course objectives.

I motivate students by a combination of push and pull. The pull is the enthusiasm I show for both teaching and the course material. Enthusiasm is contagious, and the students end up wanting to learn and succeed. The push comes from highly challenging assignments plus the high expectations that I have for my students.

Taking a course should be a personal experience, and students should not be just bodies in a large lecture hall. I put considerable effort into learning every student's name and some personal background about them. This is quite a challenge.
I demonstrate to the students that I care about them and their success in my course. This is an effective motivator and at times serves as a safety net for a student who might otherwise fall through the cracks.

Finally, irrespective of the course level I am teaching, I always make sure that my students get connected with current and future developments and research in course's respective area. I believe that making this connection inspires students to acquire more knowledge and build the habit of learning more all the time.