

Statement of Teaching Philosophy and Interests

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Teaching Philosophy

“Those who can, Teach!” This has been my philosophy since I began teaching in the sciences, and it is even more valid today. With the advent of the internet and the information revolution, every student can go to a wiki or a blog and digest the information held there. It is the role of the teacher to guide students from being information consumers to creators of knowledge—the teacher is the ultimate alchemist, transmuting the abundance of base information into purest understanding. To do so requires introducing students to a deeper understanding of the subject through experiential learning such as would be found in the professional world (academic or industrial). Students can learn from professional examples set by their teacher, and the teacher, having the advantage of experience, must show students the thinking strategies that are most effective in their field of study while empowering them to develop their own. My teaching philosophy, in summary, is to synthesize my understanding, experience, and professional skills into strategies that will help the students obtain and retain knowledge and skills that will allow them to make new contributions to their chosen field.

My first goal in teaching is to make students think—to break through the surface tension of introductory material and instill in each student the desire to dive deeper into the pool of knowledge. By providing the students with professional applications of new material, I generate interest in the subject as well as influence them to seek novel ways to apply their knowledge. I teach by providing an interactive environment that encourages the students to think critically about the subject material, rather than relying solely on fact memorization. In addition, I incorporate examples of active research in my homework and assessments; students do not solve homework problems in vain, but are actually contributing to current research.

My second major goal is to teach the students how to learn—and how to teach. Most students are unaware of the differences in auditory, oral, visual, and kinesthetic learning styles, and most have been exposed to only one or two by the time they reach undergraduate levels. I make it a point to aid students in identifying the learning style that best enables them to retain and use the material, and to realize that no single way works for every student. Every student is unique in their approach to learning, and it is my job as the teacher to ensure that every student learns the material. As a teacher, I recognize that one of the best ways to learn is to teach others, and I encourage students to take the initiative and teach by giving presentations and homework problem walk-throughs.

The last major goal I bring to my classroom is instilling a sense of community among the students, as this encourages critical thinking outside the classroom and an esprit de corps that encourages the students to discuss the material among their peers. I find the tools available in Blackboard to be ideal for this task; setting up a classroom blog or forum provides an ideal venue for students to discuss the daily topics among themselves or with the TAs. Students will have assigned papers to read from the current literature, and can use the online tools to talk about their findings outside the classroom. Students also will be required to work on group research projects and present their findings to the class. Such collaborative learning highly reflects the way research is done in the professional world, and will allow the students to learn the skills needed to interact successfully with others. Some forms of assessment, such as lab reports, will partially be accomplished through peer review, a practice integral to modern academia; students being assessed will have the opportunity to revise their work and resubmit, just as with professional journals.

Teaching Interests

My teaching interests lie particularly in undergraduate and graduate level chemistry and biology. My research background in polymer, inorganic, and biochemistry has given me experience in most chemical applications, and a vast background in biological and chemical methods and techniques. I am qualified to teach all levels of general chemistry and biology, as well as higher level courses in quantitative, computational, and polymer chemistry, biochemistry and biophysics, and structural and molecular biology. I can also teach methods such as thermogravimetric analysis, X-ray crystallography, circular dichroism, various types of electrophoresis and blotting, and IR, NMR, and mass spectroscopy.