Statement of Teaching Philosophy

Philosophy Most beginning chemistry courses teach students the rules of chemistry in a rather dry, boring and unfriendly way. I became a chemist because I think that chemistry is fun, challenging and exciting and I want to show my students how this seemingly dry stuff is actually fun and interesting to me. Students who are engaged and interested are better motivated and learn better than those who are bored, disinterested and absent. I also emphasize understanding the material rather than having students memorize everything in sight because this is what they will leave the class with rather than the 200 equations that they crammed. Every one of my organic chemistry exams had a "thought" question which tests understanding rather than memorization. However of course a certain amount of memorization is essential in learning organic chemistry.

Many chemistry students especially organic chemistry students come into class expecting to do badly in chemistry. I tell my students that if they come in expecting to flunk organic chemistry, then they absolutely will flunk. However if they come to the class with the attitude that if they work really hard, then anything is possible then anything is indeed possible. My general philosophy about teaching chemistry is to explain things in a way that the abstract and dry concepts seem common sense, easy and (gasp) fun. For instance anti addition of halogens to alkenes is described as Vin Diesel (the halogen) sitting in a child's chair (the alkene). To explain dipole moments of molecules for intermolecular interactions, I have students imagine a red ball at the center of the molecule with tiny horses running in the direction of the dipole moment arrow and of course sometimes the little horses end up in a little heap at the red ball. I think students learn more if they are not bored and are having fun in class. It is hard to forget the gigantic halogen sitting on the tiny alkene during an exam.

I make my students constantly study by giving quizzes between their exams. Not keeping up is the reason why most students don't do well in organic chemistry. My students also know that their grade is exactly what they produce on the exams and they know that they can believe in the integrity of their grades. To ensure this, students receive a copy of the answer key that I use to grade their exams with points listed for common mistakes. (My org. chem. exams consisted of 1/3 multiple choice, 1/3 short answer and 1/3 essay-mechanism-synthesis.) One semester for some reason, my students started flunking out every quiz and it was obvious to me that if I didn't do something the majority of my class would flunk the upcoming exam. Instead of throwing up my hands and saying "... well those people are just too stupid to learn this stuff...", and either making the quizzes easier or flunking out the majority of the class, I made a deal with the students to give a quiz every week so that the students would study more and promised to drop some of their terrible quiz grades. As a result the students learned the material and not very many students flunked the class. Of course both the students and I had to work very hard to achieve this result.

For higher level courses the curriculum should make the chemistry graduate a hot commodity on the job market by reflecting current trends. In addition the curriculum should prepare the students with a solid background and make the students into independent thinkers. To reflect current trends, the organic chemistry curriculum should emphasize applications in pharmaceuticals and polymers. At DSU I have taught advanced organic and will be teaching graduate courses in bioorganic and organic spectroscopy. The inorganic chemistry curriculum should emphasize catalytic applications, catalysis in organic synthesis, metallopharmaceuticals, and materials. Instrumentation courses should present new methods such as NMR structure solution of enzymes. In my MS level courses, I have covered recent research papers in addition to the textbook in order to emphasize current developments. Industrial involvement in funding of academic research and on site industrial recruitment of new graduates should be actively pursued.

Sometimes in these large introductory lectures, students can feel like a number in the crowd. I believe that even in a lecture of 100 that there are ways to make the students feel as if they and I are real human beings. I can tell even in a class of 100 students if I see the gleam of understanding in the individuals in the entire class with one glance. Also I ask for and answer questions during class even in

large classes. I also actually listen to my students and sometimes I change the way I do things if I think that the students have a good idea. I feel like I am teaching chemistry to a hundred of my friends and almost cannot believe that I am getting paid to do something that I enjoy so much.

I think that being a professor is a rewarding profession because you get to influence the most important thing in the world, the minds of young people and you get to shape what the next generation will be doing with their lives. I think that students know when a professor is trying to exploit them and when a professor is truly trying to help them and sometimes just that fact makes all the difference to the student's success.

Experience: Currently I am a professor at Delaware State University a comprehensive land grant HBCU with approximately 3500 total students, approximately 30 chemistry majors, 7 tenured or tenure track professors and a small MS program. I am teaching organic, general chemistry, and some graduate classes (class size ~50 to 15 students). I am also supervising a number of students in my research lab. Previously I was a professor at ASU teaching sophomore organic chemistry lecture (class size 20 to 60 students, 90 students in 2 sections). I also taught organic chemistry lab using my own lab manual. As PI, I also directed the research of 5 undergraduates on average per year at ASU. ASU has approximately 10,000 total students, 10 tenure track chemistry professors, 180 BS/BA chemistry major students and a small MS program. Previously I was a professor at SUNY, Cortland. Cortland is primarily an undergraduate institution consisting of approximately 7,000 students with a small chemistry master of education program when I was there. The Cortland Chemistry Department consisted of approximately 5 faculty members and about 5 chemistry majors total.

I taught the organic chemistry lecture (entire sophomore class, approximately 40 students) and the lab at SUNY, Cortland for the 2 years that I was at Cortland. While I was at Cortland, enrollment in second semester organic lecture increased from approximately 5 students to 30 students. This is a change from 16% retention from first to second semester organic chemistry lecture before my arrival to 75% retention after I started teaching organic chemistry. Second semester organic chemistry is not a requirement for the majority of students taking organic chemistry. The number of students taking biochemistry, the class normally taken immediately after organic chemistry with organic chemistry as prerequisite also increased enrollment from Fall 99 to Fall 00 from 8 to 15 students. The number of chemistry minors also increased dramatically. At Cortland, I also designed and wrote handouts for the 2 semester organic chemistry lab class and was developing the lab handouts for a lab manual for the 2 semester semimicroscale organic chemistry lab class.

Prior to this I was a professor at St. John's in NY, NY (Queens) an MS granting chemistry department with approximately 10 faculty members and about 20,000 students. At St. John's I taught a sophomore level organic chemistry lecture & lab, an MS level bioorganic chemistry course (a new course), an MS level organic spectroscopy course (covering NMR, UV-Vis, IR and mass spectroscopy) and freshman general chemistry lecture. Introductory undergraduate lecture courses at SJU usually consisted of approximately 100 students per section. While I was at SJU, enrollment in my graduate chemistry classes was almost twice the enrollment in other professor's graduate classes. Most of the SJU graduate students were part time students from local industry.

Prior to this I taught at the U. of Toledo and the U. of Missouri, Columbia, both of which are Ph.D. granting departments with around 100 graduate students each. While at the U. of Toledo, I taught sophomore organic chemistry [1st quarter-120 students, 2nd quarter-160 students and 3rd quarter-300 students (170 students morning section and 100 students afternoon section), the entire sophomore class]. I was also the lecturer with 2 TAs of an instrumentally oriented lab for majors and coordinated a nursing lab with 3 TAs.

While at the U. of Missouri, I taught an organic lecture for nonmajors and two organic chemistry lab courses with lecture for sophomore level majors consisting of about 260 students with 9 teaching assistants under my supervision. I used my own handouts with a new microscale-macroscale textbook as the background reading so I set up the two organic lab courses from scratch at the U. of Missouri. Before these faculty positions, I was a teaching assistant for six years. As a TA I taught freshman

general chemistry recitation, freshman lab, sophomore organic lab and a junior level integrated physical / inorganic / analytical instrumental lab.

Qualifications: I am qualified to teach organic chemistry. I am also qualified to teach general chemistry. One of my current research projects is a DNA project and I have a long history in bioinorganic / bioorganic chemistry research so I am qualified to teach a bioorganic / bioinorganic course. Also I am qualified to teach an upper level class in spectroscopy for organic & organometallic analysis & a stereoselectivity synthesis course.

Student Research: As a lab TA & as a professor teaching organic lab, I have had a lot of experience working with inexperienced chemists. In my prior faculty positions, I have had as a PI on average 5 student per year working on my research projects. I usually work side by side with my research students in the research lab so that it does not take much time for me to correct student research technique mistakes and the students learn a lot in a short period of time. At the U. of Oklahoma where I was a visiting professor, I learned how to supervise mostly graduate students in research. From directing research a number of years, I have learned how to have my inexperienced research students contribute to my research output instead of lessening my research output by only taking up all of my time. My research students will tell you that I am a research group member and friend more than I am the boss. My research students & I enjoyed the occasional research group morale boost of the group pizza or lunch.