Steuard Jensen **Statement of Teaching Philosophy**

The ability to think like a physicist is valuable for everyone, as much for doctors and journalists as for specialists in the field. Every physics class shares this common purpose: to teach the critical thinking and problem solving skills that physicists use on a daily basis. Just as important, it means sharing the scientific beauty of the physical world and the thrill of understanding it. I strive to have my students actively thinking like physicists within minutes of entering the classroom, and when solving problems I push them to explain not just what to do, but why.

To keep students involved and thinking during class, I try to include a "think/pair/share" activity for one step of most examples: every student writes down her own answer and then discusses her reasoning with a neighbor. This peer instruction is valuable for students of all abilities and it sometimes leads to a broader discussion of the topic. For longer or less concrete problems I break students into small groups; doing this even on the first day of class shows the students that I trust them to succeed. Constructive feedback is crucial for all of these activities: even when an answer is wrong I find some point of reasoning to praise.

As for course content, I explicitly embed every concept in a broad knowledge structure for physics. Thinking like a physicist means internalizing the relationships between ideas, and guiding that development is the teacher's primary role. Along the way I discuss common misconceptions to help my students see where their expectations must change, and I teach them to solve problems by breaking complicated scenarios into simple steps where the relevant big ideas are clear. In short, I spend class time discussing and applying major results rather than deriving them: the textbook is there to connect the mathematical dots.

My focus on ideas and understanding extends beyond the classroom. On homework and exams I require students to explain and illustrate their work: equations without English are not enough. I sometimes dispense with math entirely, assigning "micro-essays" as homework or using writing activities during lecture (ideas that were suggested in pedagogy meetings held in our department). When students ask questions during office hours or online, I do not just point them to the answer but guide them through a physicist's reasoning to the solution.

I use many strategies to keep students engaged, starting with my own enthusiasm for the subject. I look for exciting demos (such as a hovercraft to explore connections between force and motion), humorous examples (such as a "hamster analogy" for circuits), and fun facts about physics beyond the course at hand. I also try to tie the hands on experience of lab to the ideas and problem solving of lecture: treating them as an integrated course can make both more rewarding, and I have revised parts of our introductory lab curriculum to strengthen that connection.

Every course must fit the students who take it. For example, my general physics class is aimed largely at premeds so I often choose class examples and homework problems relevant to biology or medicine, including a discussion and computer simulation of MRI to illustrate quantum phenomena. Many of these students are rusty on math, so I gradually introduce concepts from vectors and calculus as needed rather than all in a rush in the first week. Meanwhile, I add variety to my upper division courses by incorporating computational tools and methods.

I look forward to engaging with my department's culture and eventually teaching most of the courses in the curriculum. I have enjoyed teaching introductory physics, statistical mechanics, and quantum mechanics as well as a wide range of labs. This spring my schedule includes electromagnetism and a new half-course that I am developing with Tom Moore of Pomona College (to be taught there using his "Six Ideas" textbooks). I am eager to teach theoretical mechanics, as well as topics such as general relativity or particle physics as needed. I have also given thought to courses for non-scientists, because with good teaching I believe that everyone can learn to think like a physicist. It is a delight to share that excitement with my students.