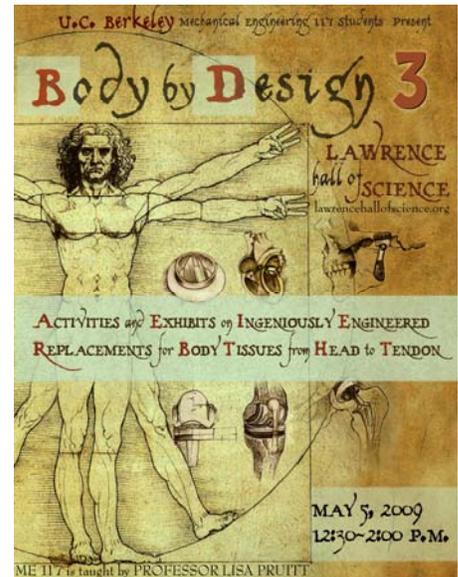


Summary of Engineering Education Activities

Throughout my academic career I have devoted a great deal of effort to the development of pedagogy for advancing engineering education and providing mechanisms for *life-long learning*. I have served as the Associate Dean for Distance Learning and Outreach Education in the College of Engineering. In this capacity, I have been responsible for developing distance education opportunities within the engineering curriculum. As part of this mission, I developed a web-based course entitled, “Structural Aspects of Biomaterials.” This course was initially offered to the Berkeley campus and the public at no cost through UC Berkeley Webcasting. Modules from this course have also been made available through YouTube.com, GoogleVideo.com, podcasting, and other sources. This web-based course has offered educational resources to students across the nation and abroad; it has provided young faculty with a format for course development in the multidisciplinary topic of biomaterials; and it has made available numerous case studies to engineers, scientists and surgeons in the medical device industry.



I am a strong advocate of K-12 *outreach education*. For the past several years, I have participated in the National Student Leadership Conference (NSLC) on the Berkeley campus. Each summer, this conference brings forth several hundred high school students who are interested in a career path in engineering. The conference exposes the students to a variety of research paths and career opportunities in the broad field of engineering. The high school students are also involved with team-based design projects and have an opportunity to visit local industries in the bay area. Workshops on the development of leadership and communication skills are offered to these students during the summer conference. We are currently working with NSLC to develop a bioengineering curriculum that is appropriate for high school students and that can be used as another means for outreach education.



For the past decade I have worked with the Lawrence Hall of Science in the realm of informal science education. In the setting of this children’s museum, we have developed several one-day interactive exhibits that are made available to the public and to children in the K-8 system. The novel aspect of this program is that undergraduates within the engineering curriculum create the interactive exhibits and perform the teaching as part of a semester long-design project. For the past three years we have focused our efforts on targeting underrepresented students in local elementary and middle schools. Undergraduates learn how to work in teams and communicate effectively, they learn key skills in both teaching and learning modalities; and they learn how to think critically and creatively. Additionally, these undergraduate team projects provide a mechanism for enhanced diversity within engineering as the children are exposed to both young men and women as well many ethnicities. This unique outreach teaching project has offered a number of unique exhibits including *The Human Body Shop*, *BodyBuilders*, *Fantastic Plastic*, *How Things Break*, and *Body by Design*. The broad objectives of this project are: (i) to disseminate science, engineering and technology information informally to the K-8

sector and the public, (ii) to create cognizant engineers skilled in teamwork, teaching, communication and outreach, and (iii) to create a national model that can be implemented in general engineering curricula and science museums to provide informal science education and accessible outreach teaching modules.

I am enthusiastic about professional development for undergraduates. I have developed a skills laboratory in which undergraduate students are presented with the framework for *professional development*. In this lab undergraduates are actively trained in technical writing, oral communication, and development of presentations; problem solving and design methodology; team work and peer review; assessment of learning styles; and mechanisms for outreach education and life-long learning.

In addition to my interest in undergraduate engineering education and K-12 outreach, I am also devoted to *mentorship* of graduate students who are seeking careers in academia. I recently received the Mentorship Award for Teaching with Graduate Student Instructors. I have utilized novel *leadership* workshops for these doctoral students and I am currently creating a program within the graduate curriculum that will develop future faculty with special emphasis on education and teaching.

Websites:

National student leadership workshop: <http://www.nslcleaders.org>

Lawrence Hall of Science: www.lhs.berkeley.edu/

Structural Aspects of Biomaterials: <http://webcast.berkeley.edu>