

Teaching Experience

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One of the most important and rewarding activities in my professional career has been teaching. The best teachers during my undergraduate and graduate training have been role models in my life. Their excellence and dedication have been a legacy on my professional development.

Undergraduate Experience

My first teaching experience began as a senior undergraduate. While working for a professor in the engineering department, I would occasionally substitute in his algebra class. Student evaluations of my work were very positive and after graduation, I was in charge of teaching a full class; first algebra and then calculus. As a result of student and faculty evaluations, I was recognized with the "Indivisa Manent" award for excellence in teaching. It was the first time this award had been given to a teaching assistant.

Graduate Experience

Upon beginning graduate work, my previous teaching experience was influential on the decision that I get assigned to teach a class on my first semester as a teaching assistant. I taught algebra, pre-calculus, and full sections of traditional calculus. I was responsible for lecturing, grading, and advising. I learned to recognize that mathematics does not have to be difficult or boring if the instructor is well prepared and able to motivate the intellectual curiosity of students. I searched for simple and interesting applications to support the class material. My computer graphics background helped me find and create interesting demonstration problems. For instance, I demonstrated the action of a rotation matrix on a vector space by creating animations of matrix multiplication times an object, a dog, a car, an apple, and showing how the object rotated accordingly. The extra effort was appreciated. My own motivation to incorporate outside material and computer technology into the classroom was soon recognized. The mathematics department supported me to attend a summer workshop on "The Teaching of Calculus based on the Harvard Consortium". Shortly thereafter, I became one of the first teaching assistants assigned to teach calculus under the Harvard Reform. Teaching evaluations by faculty and students ranked my calculus teaching performance at the top three in the department.

Postdoctoral Experience

During two Postdoctoral Research Fellowships at The Univ. of Houston, I had the opportunity to teach upper-division courses in linear algebra and two sections of ordinary differential equations, one for engineering majors and one for mathematicians. In the engineering course, I employed a new book: "Ordinary Differential Equations with MATLAB", written by Marty Golubitsky with whom I did my postdoctoral work. The course was taught with the aid of MATLAB computer programs. These programs were specifically designed to visualize and enhance the understanding of linear algebra concepts and solutions of differential equations applied to engineering problems.

Faculty Career Experience

Throughout my career as Assistant/Associate/Full Professor, I have taught undergraduate courses in Calculus for Life Sciences, Linear Algebra, Math Modeling, Elementary Differential Equations; Group Theory, Rings, and graduate courses in Ordinary and Partial Differential Equations, Math Modeling, Perturbation Methods, Linear Algebra, Math Modeling. I have also created and taught two new graduate courses in Discrete and Continuous Dynamical Systems and Chaos, one new course in Fractal Geometry,

one new course in Pattern Formation, and a special topics course on Bifurcation Theory in Symmetric Systems. In all these courses, I have continued to integrate the use of mathematical software: Matlab, Maple, DsTool, and personal programs. The math department and the Computational Science and Engineering Center at my current institution place very strong emphasis on teaching evaluation as criteria for promotion. My teaching evaluations have been consistently above department average, and in certain courses such as dynamical systems and fractal geometry the evaluations have lead to perfect scores of 5 in a 1-5 scale (5 being the highest), as evidenced by the early promotion of my position to Associate and then to Full Professor. Both undergraduate and graduate teaching assignments have helped identify, recruit, train and mentor some of the most promising students for research activities. In particular, recruiting and training of underrepresented minorities for careers in science and engineering. For example, I recruited Mayra Hernandez from an undergraduate course in Linear Algebra that I taught in 2005. Ms. Hernandez was a student in the SDSU-UCSD math-education B.S. program. Under my direction and support from an NSF grant, Ms. Hernandez successfully completed in 2008 her M.S. thesis in Applied Math and then won the prestigious **NSF Graduate Research Fellowship Award**. Ms. Hernandez is the first student in the history of the Math Department at SDSU, and the first Mexican-American student in the history of the College of Science, to win such award. She is currently in the Applied Math PhD program at the University of Washington.

Future Plans

In the future, I plan to continue exploring new methodologies to make the learning of applied mathematics and computational methods courses a challenging and helpful endeavor. In particular, I would like to explore the possibility of expanding the current curriculum, consistent with current trends, needs and interests. I am open to teach a wide variety of courses where my interdisciplinary can make a difference and contribution to the needs of the department. In addition, I would like to use my previous experience to attract, recruit, and mentor students from all possible backgrounds, specially minority students from underrepresented groups to integrate them into research activities. I already have a track record of successful activities and would like to continue with similar activities. I firmly believe that teaching is a rewarding two-way experience in which both students and teachers have always something to learn. As scholars, we have a mission to prepare younger generations for successful careers in science and engineering. It is not only our responsibility to try to understand the constantly changing needs of a multi-cultural student population but also to accommodate our available technology to prepare them for meeting the requirements and challenges of our society.

Twenty six years of teaching experience, accompanied with research and industrial experience beyond the post-doctoral level, have enhanced my skills to advise students on the qualifications required for a successful career in mathematics and related disciplines.