

Teaching is an undertaking that I have always greatly enjoyed, and viewed as an integral part of my professional activities. My classroom experience comes from teaching several graduate and undergraduate level courses at the University of Pittsburgh, Rutgers University, University of Minnesota, University of Chicago and Leipzig University (Germany). In Chicago, I also taught at the VIGRE Research Experience for Undergraduates programs, and I coordinated graduate topic seminars (also at Pittsburgh, Minnesota and Carnegie Mellon University). I have supervised two postdoctoral fellows: Mohammadreza Raoofi (now at Shiraz University, Iran) and Pawel Konieczny (now at Institute of Mathematics and Applications) and one M.Sc. thesis: Oliverio Alvarez (now at ExxonMobil Research Center). Five graduate students defended their PhD theses under my direction: Hui Li at Minnesota (2012), Pablo Ochoa at Pittsburgh (2014), Luca Codenotti at Pittsburgh (2017), Diego Ricciotti at Pittsburgh (2018), and Michael Lindsey at Pittsburgh (expected graduation 2019). I also served as an initial adviser to about 25 beginning Ph.D. students.

In Pittsburgh, I have taught the following graduate courses: Graduate Real Analysis 1 and 3, Topics in Calculus of Variations, Differential Geometry, Partial Differential Equations, Symplectic Geometry and Topics in PDEs. At Minnesota, I have redeveloped and taught the one year long sequences of the core course in Graduate Real Analysis and Functional Analysis. All these courses were self-contained (although some text-books were recommended), with weekly homework of about 5 problems of various levels of complexity, accompanying the lectures' material. The topics that we covered, as well as the structure of these courses (including the topics of students presentations) can be found on my homepage <http://www.math.pitt.edu/~lewicka/>. Perhaps a good indication of student's evaluation of my course was that almost all students who followed the Real Analysis sequence, enrolled in the following year's Functional Analysis as well.

My other graduate level teaching activities included a series of topics seminars (lasting two or one semesters) on the advances in Game Theory and PDEs (Pittsburgh), the theory of Hyperbolic Systems of Conservation Laws (Germany and Chicago), a seminar on Mathematical Theory of Elasticity, joint with the Civil Engineering Department at Minnesota, and a working group on Rigidity of Thin Structures at Carnegie Mellon University. My classes were attended by graduate students, postdocs and faculty.

Beyond regular courses in the Mathematics departments I was affiliated with, I also taught some short graduate courses by invitation at: University of Florence (10 hours), IMA summer graduate program (10 hours), University of Wurzburg (10 hours), University of Warsaw (16 hours).

Regarding my experience in the undergraduate level teaching, I taught the following courses at Pittsburgh: Introduction to Analysis, Introduction to Number Theory, Differential Equations, Topology, Introduction to Differential Geometry, Calculus 3 and Combinatorics. In Minnesota I taught the Dynamical Systems and Chaos course, and Differentiation and Applications, aimed at the IT freshmen. I also run the weakly Putnam and North-Central Competition practice sessions. In Rutgers, I taught two large classes of Calculus I for Mathematics and Physics Sciences. This experience was comparable to teaching the Advanced Engineering course at the University of Chicago, which was aimed at physics and chemistry majors. It is a very rewarding experience to see the hard work and the improvement of my students throughout the semester. I had students coming to each office hour that I held, and improving from getting as low as 10% on the first midterm, to scoring the well merited 100% on the final exam and further requesting admission to the honors courses.

Running the Putnam sessions at Minnesota was a bit similar to teaching the VIGRE REU program at the University of Chicago, during the summers of 2003, 04 and 05. These were two weeks long intensive courses, with the scope of introducing about 30 local (preselected) undergraduates to the chosen subject, such as: Topological Degree Theory, Control Theory and the Hamilton-Jacobi Equations. The role of a teacher in this program was different from the standard role of an instructor in a university classroom. The teacher was expected to encourage a “spirit of exploration” in which the students (though guided by the teacher) discover the material on their own, through a series of problems and examples. I received strongly positive evaluations from students attending these classes.

Following the award of my NSF Career grant, I have also given many undergraduate level seminars and colloquia popularizing mathematics: at Penn State, Rutgers, Stevens Institute of Technology, Duquesne, University of Lincoln, Montclair State, University of St. Thomas, University of Minnesota Duluth. In 2013 I was one of the plenary speakers at the Young Mathematicians Conference at Ohio State University, which is a premier NSF-funded annual conference for undergraduate research in mathematics.

Again at the University of Chicago, in 2003, I taught the one year long experimental Mathematical Biology sequence which I also designed and supervised in collaboration with the Biology Department, following the NIH report 'BIO 2010: Transforming Undergraduate Education for Future Research Biologists'. Some of my biology majoring students requested admission to the honors courses in mathematics. For developing this course, I was recognized by a special teaching award from the Dean of the Biological Sciences Collegiate Division.

In going beyond the fundamentals of good teaching, I have always tried to make personal connections with students. A number of my old students still keep in touch with me. They frequently ask for occasional help with more advanced courses, as well as seek my advice about choosing a career path. This is especially important with female students, who would like to see what the academic opportunities bring from another woman's perspective. Concluding, let me add that during my own school years in Poland, I had a good fortune to meet a number of exceptional teachers. I now realize how much I owe to their example.