TEACHING STATEMENT

1 Teaching Philosophy

I focus on teaching my students to generate meaningful insights into economic issues, via both solid reasoning and appropriate quantitative analysis. I realize it might be challenging for a single person to master both the "hard" power of mathematical methods, and the "soft" understanding of real-world decisions, but learning to interface these skills is precisely the competitive advantage of an economist.

I believe the key to overcoming the challenges of learning is keeping students engaged, both emotionally and intellectually. The material should be motivated by examples relevant to the students – something that they could use in their future job or subsequent academic work, or an issue that has impact on the broader world. Highly technical methods should be introduced as response to the economic features of the situation we are studying, or limitations of the data we have about it. The tedious mathematical derivations should produce results that are not only proven, but also make intuitive sense, and have a clear use in answering economic questions. The solution to a homework problem is not just a number, but a statement about what could happen in an actual economic situation, and what it implies for the parties involved in it.

Finally, a student should feel the satisfaction of learning. If the material is too complex (or rather not well presented), they will feel lost and frustrated. If the material is too easy (even if superficially entertaining), they will realize that they are wasting their time. It is the narrow line between these two extremes that leads to an "aha" moment when the pieces of knowledge finally click together and add to student’s understanding of the world.

In line with these principles, I ensure that both lectures and homeworks involve both "hard" and "soft" aspects of the material, I encourage students to think for themselves both through class participation and independent work, and I make every effort to respond to any form of student feedback.

2 Courses taught

During my time at Tepper School of Business, I have taught two undergraduate courses: 73-363 Econometrics (formerly 73-261) and 73-365 Firms, Market Structure and Strategy (formerly "Industrial Organization"), as well as three Ph.D. courses: 47-805 Computational...
Methods in Economics, and 47-811/812 Econometrics I/II. I have developed every course except 47-805 from the ground up. I have also advised a number of undergraduate and Ph.D. students.

2.1 73-363 Econometrics (undergraduate)

This is the final course in Quantitative Analysis sequence of core courses for Economics as well as several joint majors. It enables students to answer economic questions using regression analysis, as well as identify and resolve the problems inevitably present in actual economic data (endogeneity, serial correlation, heteroskedasticity, etc.). These skills are frequently used in Senior Projects and Honors Theses, and are invaluable in many industry jobs. The course involved both theoretical and applied work, the latter fully reliant on actual data from various economic papers. The final project asks students to estimate supply and demand, using various expansions of the dataset from Denis Epple’s "Missing Example" paper, and applying whichever methods they find appropriate.

I continuously adapt the course. Over the years, I have introduced countless examples and experiments, found a way to explain inner workings of multiple regression without matrix algebra, added a review of hypothesis testing (which is not adequately covered in the prerequisite course, 36-226), tried out several packages of statistical software.

I have also participated in curriculum discussions that culminated with removal of 36-226 from the Quantitative Analysis sequence, and its replacement with Tepper’s own Econometrics I course, which will absorb some basic material from current the Econometrics course, leaving more room for examples and applications.

2.2 73-365 Firms, Market Structure and Strategy (undergraduate)

The course has evolved from an exercise in game theory (under the title of "Industrial Organization") to a much more applied study of competition between firms (and their attempts to avoid it), in the industries with distinguishing features like network externalities, innovation, information asymmetry, etc. Students learn to identify these market imperfections and predict their impact on market structure, firms’ strategy and overall welfare, as well as any potential anti-trust issues.

While Industrial Organization is an old field with plenty of examples from history, I try to keep the course rooted in modern industries. Instead of VHS vs. Betamax standards war, I based a recent final exam on the ongoing competition between standards for wireless charging of cell phones.

I am continuously collecting recent news articles on cases relevant to the course – Google’s antitrust charge in Europe, OPEC’s response to the drop in oil prices, merg-
ers in various industries (e.g. Health insurance responding to ACA), unbundling of cable channels, and so on.

2.3 47-805 Computational Methods in Economics (Ph.D.)

This course is a part of Macroeconomics sequence, and provides students with the toolset to solve numerically the kind of relevant but intractable problems that arise in modern Macro, as well as in Finance and Marketing (students from these fields also take the class). The course culminates by solving Bellman equations in their various forms (both state and time can be either discrete or continuous), but also develops the necessary "building blocks": optimization, polynomial approximations, etc.

Developing this course was particularly interesting as it is typically offered as a higher-level elective, so I had to identify the key topics essential for student’s subsequent research. I have continued updating the course over the years, reworking my presentation in areas where the students had difficulty, and focusing on topics which are more commonly used in further research. I also have recently made time to teach an advanced topic of students’ choice; they chose Markov-Chain Monte-Carol (MCMC).

2.4 47-811/812 Econometrics I/II

These are the standard Econometrics Ph.D. courses. Econometrics I covers the linear regression and its variants (TSLS, FGLS, etc.), while Econometrics II covers the extremum estimators used in modern structural work - MLE and GMM. My goal, as always, was to ensure that students not just have the necessary tools to conduct their research, but know how and why they work, and when to use them.

I have taught these courses only briefly (47-811 twice, 47-812 once), to fill in for departing faculty members, so I did not have much chance to improve the material, but this was a rewarding experience, and generated synergies with the undergraduate Econometrics class that I teach.

2.5 Other teaching activities

Math Review. After teaching 47-811 Econometrics I to Ph.D. students (which is a first course they took), I realized that some of them would benefit from a review of various undergraduate-level topics. So next year, I took the initiative to teach a three-session review of Matrix Algebra, Real Analysis, and Probability Theory. A subsequent survey showed that students found it useful, so next year I expanded the review to five sessions, and hired a promising Ph.D. student to teach them. The year after, it was made into a
permanent feature of the new student orientation, and further expanded to supplement lectures with practice sessions.