Econ 571
Advanced Econometrics:
The Econometrics of Program Evaluation
Fall 2018

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Prerequisite:
The pre-requisites are Econ 400 (Statistics), Econ 410 and 420 (Intermediate Microeconomics and Macroeconomics), either Econ 470 or Econ 570 (Econometrics), and at least one semester of differential calculus.

Course description:
The econometrics of program evaluation is an application of statistics to assess the causal effects of particular programs and to make counterfactual predictions. The objective of this course is to study econometric models and inference methods widely used in empirical research, which include self-selection models, heterogeneous treatment effect models, differences-in-differences methods and regression discontinuity designs. We will focus on intuitive understanding of each method, its implementation and interpretation, rather than mathematical proofs.

Textbook:
Angrist, Joshua and Pischke, Jörn-Steffen. Mostly Harmless Econometrics, 1st Edition, Princeton University Press

Grading:
Your final grade will be based on midterm exam (15%), final exam (35%), two presentations (10%), final research paper (20%), class participation and attendance (10%) and problem sets (10%). There will be no make-up exam for the midterm. If you miss a midterm exam because of a medical or family emergency, the final exam score will be 50% of your final grade. Otherwise, you will receive a zero score for the missed midterm.

Midterms and final:
Individual cheat sheets are NOT allowed (therefore, of course closed book) I will provide formulae sheets in each exam. You are allowed (actually encouraged) to use your own calculator (but not laptop/phone/any type of tablet) in the exam. The level of difficulty and the format of the exam will be very similar to problem sets. The final exam will cover everything discussed in class throughout this semester.

Problem sets:
There will be bi-weekly problem sets, each of which involves empirical analysis. You should hand in your homework assignments at the beginning of class the day they are due. Late problem sets (but before answers are posted) will be marked down by 50%. Solutions will be posted on the course Website on Wednesday evening after 9 pm. Assignments handed in after that will receive no credit, no exceptions. Students are welcome to work in groups on their problem sets, but each student must write up answers separately. Also, if your answers are based on your friends' answers, you need to add casual citation in your homework as references. Copying is not allowed. Please append your STATA "log" files to your assignments whenever needed.

Student presentation:
You will need to present the progress of your research twice in class during the semester.

Empirical research paper:
For the empirical project, you should use datasets to answer some economic questions, using econometric techniques from this course. Your paper will be approximately 15-20 pages long and explain the research question, data, estimation strategy, and results. You should be able to write your research question as "the effect of A on B". Also, I expect that the econometric technique used in your research would be more sophisticated than simple OLS.

Course outline:
1. Quasi-experiments and selection problem (Ch. 2)
2. Regression and causality (Ch. 3)
3. Review of instrumental variables (Ch. 4.1-4.3)
4. Heterogeneous treatment effects models (Ch. 4.4, 4.5)
5. Review of panel data methods (Ch. 5.1)
6. Differences-in-differences (Ch. 5.2, 5.3)
7. Regression discontinuity designs (Ch. 6)

Classroom etiquette:
To maintain a classroom environment as a good learning environment for everyone, you must turn off all cell phones, laptops, and other electronic devices during class.