

**Public Policy 712**  
**Causal Inference in Education Policy Research: K-12**

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Weill Hall, Room 5124

Course Meeting Time and Location:

M/W: 10-11:20am

Weill Hall 1210

Office hours: M/W 1-2pm (and by appointment)

Teaching Assistants

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**Overview**

This course examines several key policy areas in the realm of early learning and K-12 education. The two primary goals of the course are (1) to provide students with the analytic framework and skills necessary to evaluate education (or other public) policies and (2) to familiarize students with the arguments and evidence relating to important education policies and/or interventions. Specific policy topics include technology in education, charter schools, school accountability and school finance reform. Specific methodological techniques include randomized-control trials (RCT), matching, regression discontinuity analysis (RD), comparative interrupted time series (CITS), and event study analysis.

**Prerequisites**

Knowledge of introductory statistics (e.g., Stats 250, PP 529, SOE 793, or equivalent) and regression analysis (e.g., Stats 413, PP 639, SOE 794 or 795, or equivalent) are required for this course. For those students who are interested, a good refresher for statistics and regression analysis can be found in: Stock and Watson, *Introduction to Econometrics* (syllabus references are to 3<sup>rd</sup> edition, but older editions contain virtually identical content).

**Course Requirements and Grading**

General Class Participation (10%) – Students are expected to attend class regularly and to have read the assigned material prior to class. Because this is a discussion-based course, the quality of the class will depend on whether students are prepared to talk about the readings each week.

Problem Sets (40%) – There will be 4 required problem sets for this course (10% each), each of which will have students using real data to do empirical exercises in Stata. Students are encouraged to work in small groups (max size 4) on the assignments, though each student is

required to write up and submit his or her own version of the solutions. Students must indicate the other students with whom they worked at the top of the problem set.

PROBLEM SET #1 – Due after Fall Break, at the beginning of class on Wed. Oct. 16<sup>th</sup>

PROBLEM SET #2 – Due at the beginning of class on Mon, Nov 4<sup>th</sup>

PROBLEM SET #3 – Due at the beginning of class on Mon, Nov 18<sup>th</sup>

PROBLEM SET #4 – Due at the beginning of class on Wed, Dec 11<sup>th</sup>

Note: Stata will *not* be formally taught as part of this course. The instructors will provide students a variety of online materials to help them learn the commands necessary to complete the assignments, and will be available to answer questions in office hours. However, students should expect to work independently to learn the rudiments of the Stata language themselves.

### Take-Home Final Exam OR Research Project (50%)

The take-home will be distributed on the last day of class (Wednesday, December 11<sup>th</sup>) and will be due by 5pm on Friday, December 13<sup>th</sup>. Doctoral students can (and IES fellows are required to) instead complete a research product that will be defined in consultation with faculty. Drafts of this research product will be due on the dates below:

Research project proposal (1/2 page)	9/18
Meet to discuss proposal	week of 9/23 or 9/30
Revised proposal (1 page)	10/2
Progress Memo	11/6
Final Research Product	12/13

### **Course Materials**

Book chapters and journal articles, all of which will be available through CANVASS.

### **Readings**

There is no course packet. All articles are available online or on the CANVAS site. Assignments will be listed under the relevant lecture at least a week in advance. We provide links and/or PDFs but you are ultimately responsible for obtaining the readings. If a link is broken or a file corrupted, find the article yourself.

We will draw largely on this textbook, which is available for free download from the UM Library:

Murnane, R., & Willett, J. (2010). *Methods matter: improving causal inference in educational and social science research*. New York, NY: Oxford University Press, USA.

We will also reference several other textbooks, which are available online or we will put on Canvas.

Imbens, Guido W. & Donald B. Rubin (2015). *Causal Inference for Statistics, Social, and Biomedical Sciences: An Introduction*. Cambridge University Press: New York, NY.

Morgan, Stephen L. and Christopher Winship (2014). *Counterfactuals and Causal Inference*. Cambridge University Press.

Stock and Watson, *Introduction to Econometrics*, Third Edition. (This is the textbook used in PubPol 639, and may be a good resource for students who want a refresher on some of this material.)

Angrist, Joshua and Jorn-Steffen Pischke. *Mostly Harmless Econometrics*. (MHE)  
Angrist and Pischke. *Mastering 'Metrics* (an undergraduate version of MHE).

Before some classes, the instructor will post several questions about the readings to Canvas. Some of these questions will have "right" answers (e.g. "What population does a given paper study?") while many others will not ("Do you find their identification strategy convincing?"). You don't need to write up or turn anything in (but you may find this helpful to do); just be prepared to speak. Also make sure to bring the readings to class, as we will reference them. As for reading strategy, for the more technical papers a good strategy is to read the abstract, intro, results, conclusions, tables/figures first and see how many of the questions you can answer. Then go back and try to understand it a little bit better.

### **Laptops/Notetaking**

To keep us focused on the class and on each other, we will keep laptops and other devices put away. Please bring copies of the relevant papers to class. We will distribute handouts of our lecture material for you to take notes on. If you want to store all class material on your laptop, transcribing your handwritten notes after lecture is a great way to nail the material. We will post PDFs of the handouts after lecture to facilitate this process.

### **Software**

We will program in Stata, a software program used widely by researchers and policy analysts. We provide links to online Stata tutorials and offer training in sections. We strongly recommend that you purchase a student version of Stata, as it is more convenient. You can get a Stata license for just this semester at a very affordable price. Order through the Stata website (<http://www.stata.com/order/new/edu/gradplans/us-pickup/>) and then pick up at Computer Showcase. You will need to have the most recent version of Intercooled Stata. If you choose not to do this, you can access Stata from computer labs on campus.

### **Academic Expectations & Resources**

Please read the information at the link below for important information on topics such as academic integrity, accommodations for students with disabilities, inclusivity and others. We expect students to be familiar with all of the expectations and resources described herein:

<http://fordschool.umich.edu/academics/expectations>