Econ 613: Applied Econometrics in Microeconomics

Spring 2020

Instructor: Daniel Yi Xu

This course is designed to provide applied econometric techniques, commonly used in Development, Industrial Organization, Labor, and Public Economics, to Master students in Economics, Public Policy, and Business. Students are expected to have taken at least one or more econometrics/statistics courses at the level of Econ 608D (Introduction to Econometrics).

The main aim of this course is not only to cover basic topics in cross section and panel data econometrics, but also to familiarize students with applications of these econometric techniques to real-world economic questions. The course instruction is divided between theoretical development in textbook and case studies, which are taken from academic publications.

The students will have hands-on experience using STATA to solve 4-5 empirical problem sets.

Course Textbook

Econometric Analysis of Cross Section and Panel Data, Jeffrey Wooldridge, MIT Press

Supplemental Reading

Mostly Harmless Econometrics, Angrist and Pischke, Princeton Press

Teaching Assistant and Office Hour

Kelly Yang and Seohee Kim are the teaching assistant for this course. They will be available to help you with course material and empirical problem sets.

Their office hours are: Seohee (Wed, 4:30-5:30PM @Social Science 327), Kelly (Fri, 4:00-5:00PM @Social Science 327)

I will also hold additional office hours during periods of midterm and final exams.

Grading

Your course grade will depend on your performance on problem sets, mid-term exam, and a final exam in the following way:

Class Participation 10%
Midterm Exam 1:  25%  (Feb 17)
Midterm Exam 2:  25%  (March 18)
Problem Sets: 20%
Final Exam: 20%  (April 15)

There will be no makeup exams. If you miss one of the midterms, the weight of the missed exam will be placed on the other, with a penalty of 20% of your midterm grade. If you miss both midterms, you will automatically fail the course.

Take-home exam will be distributed at Sakai on April 15 and due at the end of day April 17 (Friday).

**Bonus Point Opportunities**: Each week, I will assign one or two research papers for a 15 min classroom presentation. The successful presenter will gain a bonus point of 5, which can be added to any of the midterm exams. (If multiple students sign up to present, I will use a random number generator).

**Preliminary Course Outline** (First Day of Lecture will be on Jan 13, 2020)

1/13-1/22:

- Instrumental Variables Estimation of Single-Equation Linear Models
- Application: Returns to Schooling
- System OLS/Impose Cross-equation Restrictions
- Application: U.S. Electricity Generating Plants and Regulation
- System Estimation by Instrumental Variables
- Application: Demand for Broiler Chicken with time-series data

*Problem Set 1*

1/27 - 2/12:

- Linear GMM
- Application: Almost Ideal Demand System
- Panel Data Model I: Fixed Effect vs. Random Effect
- Application: Competition and Airfare, Returns to Schooling of Twins
- Panel Data Model II: Dynamic Panel Data
- Application: Production Function Estimation
Problem Set 2

2/17: Midterm Exam I

2/19:

M-Estimation and Numerical Optimization

Brief Review of Maximum Likelihood Method

2/24-2/26:

Discrete Response Model I

Application: Workplace Smoking Ban, Female Labor Force Participation

Discrete Response Model II

Application: Choices of Energy for Heating

Problem Set 3

3/4: No Class (Professor in travel to give a research seminar)

3/9 – 3/11: Spring Recess

3/16:

Sample Selection

Application: Heckman Selection Model and its application

3/18: Midterm Exam II

3/23 – 3/25:

Program Evaluation

Randomization and Average Treatment Effects

3/30:

Matching Methods

Application: Job Training Program

Problem Set 4
4/1 - 4/8:

Dif-in-Dif

Application: Minimum Wage, Health Insurance, Disability Benefits

Regression Discontinuity Design

Application: Voting and Policy

*Problem Set 5*

4/13:

Machine Learning Basics

4/15:  **Take-home Final Exam Distributed**