

ECO 508: Research Methods for Policy Analysis II

Winter 2020

DePaul University - Department of Economics

Time: Tues 5:45pm-9:00pm
Room: Lewis Center, Rm 1309

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Office Hours:

Tuesday 3:00pm-5:00pm,
Or, by appointment, though I am rarely far from email

Textbook:

- (1) A.H. Studenmund, *Using Econometrics: A Practical Guide*, 7th Edition
- (2) Joshua Angrist and Jorn-Steffen Pischke, *Mastering `Metrics: The Path from Cause to Effect*.

Along with these books, I will assign several academic articles to read. The readings will be available for download in PDF format from D2L.

This course will also use the statistical software, Stata. Stata is available on all computers in all computer labs under "statistics/economics". It can also be accessed online using However, it is a good idea to buy a license for the software, you can purchase a 6 (12) month license of Stata IC for \$48 (\$94) by going to <https://www.stata.com/order/new/edu/gradplans/student-pricing/>.

Course Description:

What separates economics from most other social sciences is that our discipline begins with a few basic assumptions and utilizes these as building blocks for models of behavior. Models are only useful if they can be tested and economists have developed a large toolkit of statistical models that are used to test these theories, estimate the magnitudes of economic relationships, and predict economic aggregates. This class has main three components: (I) applying the linear regression model and cross-sectional data to better understand the causal relationships between economic variables, (II) using the linear regression model and time series data to predict economic outcomes, and (III) using panel data to better estimate causal effects. Infused in each of these sections will be exposure to academic studies and hands-on practice with real data, where students will be asked to estimate models and interpret their results.

Prerequisites:

ECO 507 (or permission of instructor)

Assessment of Students:

Problem Sets (5):	25%
Midterm 1:	20%
Midterm 2:	20%
Final Exam:	30%
Class Participation:	5%

Assignments:

Problem Sets: Five problem sets will be assigned during the semester. These problem sets are designed to gauge your understanding of the concepts discussed in class and will include derivations, interpretations of results, regression specification, and analyses of results. Students are encouraged to work in groups of 2 on the problem sets. Problem set answers should be turned in at (or emailed to me by) the beginning of class on the day they are due. Late problem sets will be marked down one grade for each day they are late. Problem sets will (generally) not be accepted after the 3rd day or once the answers have been posted on D2L.

Midterms: There will be two midterms for this course. The first one will be on 2/4/20 and will count for 25% of your final grade. I expect that it will cover the topics in weeks 1-4. The second one will be a take-home midterm and due on Tuesday 3/3/20 (also counting for 25% of your final grade). I expect that it will cover the topics in weeks 6-8.

Final Exam: The final exam for the class will be a series of empirical exercises that cover each of the three major sections in the class. It is due on Friday 3/20/20 at 8pm.

Important Dates:

Problem Set #1 Due:	January 21 st
Problem Set #2 Due:	January 28 th
Midterm #1:	February 4 th
Problem Set #3 Due:	February 18 th
Problem Set #4 Due:	February 25 th
Midterm #2 (Take Home):	March 3 rd
Problem Set #5 Due:	March 10 th
Final (Take Home):	March 20 th

Syllabus: ECO 508

I. Analyze, Interpret, and Apply the Linear Regression Model

Week 1: Review OLS Regression with Cross Sectional Data with an Emphasis towards Causality

- Readings: (1) Mastering `Metrics: Introduction and Chapter 1
(2) Detailed Notes on the Derivation of the Simple Regression Model and the Multivariate Regression Model (posted on D2L)

Week 2: Applications of the Linear Regression Model:

- Readings: (1) “The Oregon Experiment: Effects of Medicaid on Clinical Outcomes,” by Baicker et al., *New England Journal of Medicine*, 2013.
(2) “Estimating the Payoff to Attending a More Selective College,” by S. Dale and A. Kruegar, *Quarterly Journal of Economics*, 2002.
(3) OPTIONAL: Mastering Metrics, Ch. 2

Week 3: Models with limited dependent variables and Applications

- Readings: (1) Studemund, Ch. 13
(2) “Keeping College Options Open: A Field Experiment to Help all High School Seniors through the College Application Process,” by P. Oreopoulos and Ford, *Journal of Policy Analysis and Management*, 2019.

Week 4: Instrumental Variables and Applications

- Readings: (1) Studemund, Ch. 14
(2) “Children and their Parent’s Labor Supply: Evidence from Exogenous Variation in Family Size,” by J. Angrist and W. Evans, *American Economic Review*, 1998.
(3) “Immigrant Inflows, Native Outflows, and the Local Labor Market Impacts of Higher Immigration,” by D. Card, *Journal of Labor Economics*, 2001.
(4) OPTIONAL: Mastering `Metrics, Ch. 3

Week 5: Structural vs. Reduced Form Analysis in Econometrics

- Readings: (1) “Structural vs. Atheoretical Approaches to Econometrics,” by Michael Keene, *Journal of Econometrics*, 2010.
(2) “A Comment: Structural vs. Atheoretical Approaches to Econometrics,” by John Rust, *Journal of Econometrics*, 2010.
(3) “Intertemporal Labor Supply and Human Capital Accumulation,” by Imai and Keane, *International Economic Review*, 2004.

II. Forecasting and Time Series Analysis

Week 6: The Basics of Time Series Analysis and Forecasting

Reading: Studemund, Ch. 12 and Ch. 15

Week 7: External Validity & Applications of Forecasting Models

Reading: TBD

Week 8: Alternative Approaches to Prediction

Reading: (1) “Machine Learnings: An Applied Econometric Approach,” by Mullainathan and Spiess, *Journal of Economic Perspectives*, 2017.
(2) “Big Data: New Tricks for Econometrics,” by Hal Varian, *Journal of Economic Perspectives*, 2014.
(3) “A Machine Learning Approach to Low-Value Healthcare: Wasted Tests, Missed Heart Attacks, and Mis-predictions,” by Mullainathan and Obermeyer, *NBER Working Paper*, 2019.

III. Panel Data and Differences-in-differences Models

Week 9: Panel Data and Differences-in-differences Models

Reading: (1) Studemund, Ch. 16
(2) Mastering ‘Metrics, Ch. 5

Week 10: Applications of Differences-in-differences Models

Readings: TBD

Additional Expectations:

Academic Integrity: Work done for this course must adhere to the University Academic Integrity Policy, which you can review in the *Student Handbook* or by visiting Academic Integrity at DePaul University (<http://academicintegrity.depaul.edu>).

Respect: The classroom is a place for learning. This is best achieved by asking questions, thinking out loud, and even making mistakes. Please treat all of your classmates with respect - we will all struggle at some point or another. If anyone has concerns about the behavior of other people in the class, come see me right away.

Timeliness: All assignments are due as posted in this syllabus. If you foresee a problem with a due date (or midterm date), see me in advance and I may grant you an extension. All unapproved late submissions will be marked down.

Disability: Students with disabilities that require additional time on exams or other efforts on my behalf, must let me know in advance as well as provide me with all of the relevant (electronic) paperwork.