ECO 508: Research Methods for Policy Analysis II
Winter 2021
DePaul University - Department of Economics

Time: Tues 5:45pm-7:15pm
Room: Zoom
Office Hours: Thursday 4:00pm-5:00pm (or by appointment)

Textbook:
(2) Joshua Angrist and Jorn-Steffen Pischke, Mastering Metrics: The Path from Cause to Effect.

Along with these books, I will assign several 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 the virtual lab. 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 two main components: (1) applying the linear regression model and cross-sectional data to better understand the causal relationships between economic variables, and (2) using the linear regression model and time series data to predict economic outcomes. We will finish up by introducing how panel data will help up 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): 35%
Midterm: 25%
Final exam: 35%
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.

**Midterm:** There will be a midterms for this course that will be held on . The first one will be on 2/2/20 and will count for 25% of your final grade. I expect that it will cover the topics in weeks 1-4.

**Final Exam:** The final exam for the class will include a series of empirical exercises that will focus on the time series aspects of the course, but also a little of the first half material. It is due on Friday 3/19/21 at 8pm.

Important Dates:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Date</th>
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<tbody>
<tr>
<td>Problem Set #1</td>
<td>January 19th</td>
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<tr>
<td>Problem Set #2</td>
<td>January 26th</td>
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<tr>
<td>Midterm #1</td>
<td>February 2nd</td>
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<tr>
<td>Problem Set #3</td>
<td>February 16th</td>
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<tr>
<td>Problem Set #4</td>
<td>February 23rd</td>
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<tr>
<td>Problem Set #5</td>
<td>March 9th</td>
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<td>Final</td>
<td>March 19th</td>
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**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:
(3) Mastering Metrics, Ch. 2

Week 3: Models with limited dependent variables and Applications
Readings: (1) Studemund, Ch. 13

Week 4: Instrumental Variables and Applications
Readings: (1) Studemund, Ch. 14
(4) Mastering ‘Metrics, Ch. 3

Week 5: Structural vs. Reduced Form Analysis in Econometrics

II. Forecasting and Time Series Analysis

Week 6: Time Series Data, Forecasting, and Seasonality Models
Readings: (1) Studemund, Ch. 12
(2) “Where the Latest Covid-19 Models Think We are Headed, and Why they Disagree,” FiveThirtyEight

Week 7: Stationarity, External Validity, and ARIMA Models
Readings: (1) Studemund, Ch. 15
Week 8: Static and Distributed Lag Models
Readings: (1) Posted Notes

Week 9: Alternative Approaches to Prediction

III. Panel Data and Differences-in-differences Models

Week 10: Introduction to Panel Data and Differences-in-differences Models
Readings: (1) Studenmund, Ch. 16
(2) Mastering ‘Metrics, Ch. 5

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.