Introduction to Econometrics

ECON 345-DL1

Online Course

Instructor

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Office Hours

Virtually, By Appointment

Prerequisites

(ECON 306 and 311) and (STAT 250 and 350 or STAT L350) or (STAT 344 and 354)

Course Overview

Welcome to ECON-345, Introduction to Econometrics. This course will be an introduction to the statistical methods that economists and other social scientists use to answer empirical questions. My goal is to make the course as accessible as possible, with a focus on practical methods and research design over technical details and proofs.

The prerequisites for this class are Micro and Macroeconomic Theory, as well as two courses in Statistics. However, I plan to spend the first few classes reviewing the relevant material from statistics courses necessary for this course.

In addition to the problem sets and exams, you will complete an original research project using econometric methods learned in class to answer an empirical question that interests you. You may complete this project as an individual, or in a group with up to two other students. I'll provide more information later in the semester.

This course will be taught online asynchronously. Video lectures will be posted on Monday of each week exploring that week's topic. These video lectures will be accompanied by a discussion board where you can respond to the lectures and ask questions. Posting on these discussion boards will be how you earn your class participation credit. Each Friday, I'll post a video where I answer the questions that people have asked on the discussion board.

Course Materials

I will provide readings from Angrist and Pischke's Mastering 'Metrics (2015), along with other papers, to accompany the lectures. If you want a hard copy of the book, it's available for around $30 on Amazon, but it's not required.

You will need to use a statistical software in order to complete the problem sets and your final research project. I recommend that you use Stata, which is the most popular statistical software package used by economists. You have a few options on how to use Stata for the class:

1. Purchase a license to use Stata on your own computer, which start at $48 for a 6-month license and $225 for a lifetime (perpetual) license.
2. Use GMU's Citrix Virtual Lab to access Stata on a virtual desktop from your device. Follow the link for setup instructions

3. Go to one of GMU's computer labs, which have Stata installed, and use the software on a university computer.

If you already have experience with another statistical software (R, SAS, etc.), let me know and I can send you the datasets in .csv format.

Grading Policy

Your grade in the course will depend on the following weights:

Problem Sets:	20%
Midterm:	20%
Final Exam:	30%
Project/Paper:	15%
Class Participation:	15%

There will be five problem sets, but I will drop the lowest score for each student, so each is worth five percent of your final grade.

This course will use a standard 10 point grading scale.

Course Schedule (Subject to Change)

Week	Subject	Readings/Assignments
Week One	Course Overview, Statistics Review, Introduction to Stata & Excel	Angrist & Pischke- Introduction
Week Two	Randomized Trials, Correlation vs. Causation, Selection Bias	Angrist & Pischke- Chapter 1 Bertrand on Discrimination RAND Health Insurance Experiment
Week Three	Introducing the Bivariate Regression Model, Scatterplots, and Residuals	**Problem Set 1 Due**
Week Four	Statistical Inference and the Bivariate Regression Model	
Week Five	The Multivariate Regression Model, Interpreting Results, and Omitted Variable Bias (Part 1)	**Problem Set 2 Due**

Week	Subject	Readings/Assignments
Week Six	The Multivariate Regression Model, Interpreting Results, and Omitted Variable Bias (Part 2)	Angrist & Pischke- Chapter 2 Dale & Krueger on College Fryer & Levitt on the Gender Gap
Week Seven	Midterm Review and Exam	**Problem Set 3 Due**
Week Eight	Heteroskedasticity	
Week Nine	Functional Forms and Qualitative Information in Regression	**Problem Set 4 Due**
Week Ten	Regression Discontinuity Designs	Angrist and Pischke- Chapter 3 Anderson & Magruder on Yelp Carpenter & Dokin on Drinking Age
Week Eleven	Instrumental Variables	Angrist & Pischke- Chapter 4 Angrist on the Draft Hotz & McElroy on Teen Pregnancy
Week Twelve	Difference-in-Differences and Panel Data	Angrist & Pischke- Chapter 5 Ayres & Levitt on Lojack Donohue & Levitt on Abortion
Week Thirteen	Make-Up and Student Presentation	**Problem Set 5 Due**
Week Fourteen	Final Exam Review and Student Presentations	

GMU Policies and Resources for Students

Students must adhere to the guidelines of the Mason Honor Code (see https://catalog.gmu.edu/policies/honor-code-system/)

Students must follow the university policy for Responsible Use of Computing (see https://universitypolicy.gmu.edu/policies/responsible-use-of-computing/)

If you are a student with a disability and you need academic accommodations, please see me and contact the Office of Disability Services (ODS) at 703-993-2474. All academic accommodations must be arranged through that office.