We aim to help you understand modern applied econometric methods and to foster the skills you’ll need to plan and execute empirical projects. Topics include randomized trials, regression, differences-in-differences, instrumental variables, regression-discontinuity designs, and simultaneous equations models. We study many examples and do a fair amount of number crunching ourselves.

Prerequisites

14.32 students should be able to use the basic tools of probability and statistics. The course begins with a brief prob-stats refresher just in case.

Course requirements

Eighty percent of success is showing up – Woody Allen

Classroom work:

Two lectures (TTH 10:30-12:00; E51-085) and a weekly recitation (F 9:00 E51-376), followed by an hour of computer lab/help.

As an incentive to show up, we take roll. Classwork includes four (4) pop quizzes and randomly assigned opportunities (called PPQs, explanation TBD) to share your understanding of papers on our reading list.

Other work:

You’ll finish the course equipped with an improved understanding of statistical inference, facility with data handling and statistical programming, and—hopefully—a good understanding of the models and methods of applied econometrics. That’s a lot of ground to cover, so plan your time accordingly. There are 5 graded problem sets and ungraded review problem sets at the beginning and end of the course. The problem sets have both analytical and computer-exercise components. Stata is our default programming language for problem sets and in recitation. Classes focus on concepts and econometric applications. Help for new Stata users will be given in recitation and by our grader. We’ll have an in-class midterm and a final during exam week.

Our (mandatory) in-class midterm is scheduled for class time March 22, 2018. There is no make-up or conflict midterm.

Grades

Showing up is 80% of success, but it’s only 10% of your grade. Grades are computed as follows: a total of 133 points, 30 points for problem sets (6 points each), 30 points for the midterm, 40 points for the final, and 33 bonus points awarded as follows:

Up to 13 points for attendance (.5 for each class attended; on-time arrival required)
5 each for 4 pop quizzes (absent or late counts as zero).

We also distribute a 6th ungraded review problem set.
The Grading Deal

Graded problem sets are mandatory; solutions must be submitted on time to receive credit. *Stata* logs are to be submitted with solution sets. A grade of 75% or better on at least 4 problem sets is required in order to be eligible to take the final. Consult with classmates on problem sets if you get stuck, but solutions must be your own work.

Comportment

Are you a strategically adept effort-minimizing goal-seeking time-manager in the grand MIT tradition? If so, this class is probably not for you. Econometric success (like love) requires unqualified expressions of commitment and desire. Also, like most things worth doing, econometrics also requires focus and attention.

In this spirit, I ask you not to bring food to class and to leave electronic and other toys shut off and put away (this prohibition includes, but is not limited to: laptops and tablets; ipods; phones; Wii, Xbox, or Playstation consoles; VR headsets; Google Glass; inflatable love dolls). Airplane mode not allowed.

Texts and readings

We rely heavily on:

Instructor notes, distributed in class.


Problems and additional readings come from:


For those who want to dig deeper:


Journal articles and selected additional readings are posted on our Learning Modules website ([http://stellar.mit.edu/S/course/14/sp18/14.32/](http://stellar.mit.edu/S/course/14/sp18/14.32/)).

Computer work

14.32 students can access cloud-based *Stata*. Please check with our TAs for info on set-up.
Course outline for 14.32

What’s it all for? Look ahead by reading:

- MM, Intro
- MHE, Chapter 1

A. Statistical Tools

Lecture Note 1: Expectation and Moments

- MM, Chapter 1 Appendix
- SW, Chapter 2

B. Review of Statistical Inference

Lecture Note 2: Sampling Distributions and Inference
Lecture Note 3: Confidence Intervals

- MM, Chapter 1 Appendix
- SW, Chapter 3

C. Analysis and Interpretation of Randomized Trials

Lecture Note 4: Inference in Asymptopia
Lecture Note 5: Causality, Experiments, and Potential Outcomes

- MM, Chapter 1
D. Regression Basics: Why and How?

Lecture Note 6: Regression and the CEF
Lecture Note 7: Intro to Multivariate Regression
Lecture Note 8: Multivariate Regression (cont.) – Omitted Variables, Short vs. Long
Lecture Note 9: Sampling Distribution of Regression Estimates
Lecture Note 10: Residuals, Fitted Values, and Goodness of Fit

MM, Chapter 2
SW, Chapters 4-7 and 17.1-17.4
MHE, Sections 3.1 (through 3.1.3), 3.2 (through 3.2.2), and 3.4.3


-- approximate midterm date (before Spring Break) --

E. Using Multivariate Regression

Lecture Note 11: Dummy Variables, Interactions, F-Tests

MM, Chapter 2 Appendix
SW, Chapters 8-9
MHE, Section 3.1.4


F. Inference Problems

Lecture Note 12: Regression Inference in Asymptopia

MM, Chapter 2 Appendix
SW, Chapters 14.1-14.3, 15.4, 17.5
MHE, Section 3.4.1


G. Omitted Variables Solutions

Lecture Note 14: Instrumental Variables Solutions for Omitted-Variables and Measurement Error

MM, Chapters 3 and 6
SW, Chapter 12, 13.5-13.7, and Appendices to Chapter 13
MHE, Sections 4.1 and 4.6.1


Lecture Note 14 (supplemental): IV for m.e.

MM, Chapter 6.


Lecture Note 15: RD in Action

MM, Chapter 4
SW, Section 13.4-13.5
MHE, Chapter 6


Angrist, Lavy, Leder-Luis, Shani, Maimonides Rule Redux.

**H: More Magic Methods**

Lecture Note 16: DD, Immigration, and Minimum Wage Effects

MM, Chapter 5
SW Chapters 10 and 13.1-13.4
MHE, Section 5.2


Lecture Note 17: Simultaneous Equations Models (time permitting)