

SYLLABUS

Lectures: MW 1:30-2:50 (Jadwin Hall A10)

Precepts: Thu, Fri 2:30-3:20pm, Thu 1:30-2:20pm, Fisher B04

Professor: Chris Sims (first half); Marco Del Negro (second half)

Preceptors: Alfonso Cebreros, Chenchuan (Mark) Li

Web page: On Blackboard, or directly at <http://sims.princeton.edu/yftp/UndergradEmet13>

Course description: This course is an introduction to econometrics. Econometrics is a sub-discipline of statistics that provides methods for inferring economic structure from data. The course aims to give you means to evaluate and criticize an econometric analysis, and also to carry out your own econometric analyses.

Prerequisites: ECO 202 (or ORF 245) and MAT 200 (or MAT 202).

Readings:

Stock and Watson, *Introduction to Econometrics*. Pearson Addison Wesley; 3d edition.

Wooldridge, *Introductory Econometrics*. South-Western Cengage Learning; 5th edition.

Either of these two books covers nearly every econometric model we will consider, though there will be material in lectures not covered in either book. You should probably buy or subscribe online to one of them, but it is not necessary to have access to both.

Lancaster, *An Introduction to Modern Bayesian Econometrics*, Blackwell Publishing.

The Lancaster book takes a Bayesian approach to inference and may be a useful additional reference for material in the lectures that has that perspective.

Requirements and Grading:

Final Exam, 50% of grade.

Midterm, 25% of grade

Problem sets, 25% of grade.

You may work with other students on the problem sets, but the writeup of the answer must be your own. The problem sets will be graded 0, 3, 4, or 5. 0 is for not handing it in, or handing in work that represents negligible effort. 3 is for work that shows some lack of understanding, or that is partially incomplete. 4 is the normal grade for complete, largely correct work. 5 is for work that goes beyond what was expected. Late work will be accepted up to one week after the due date, but will be penalized one full point. (So a grade of 2 is possible, on a late "3".) The idea is that it is very important to keep up with the work, so honest but imperfect attempts, done on time, will not much affect your overall grade, but failure to do the work can have a substantial effect.

Course outline

The first half of the course will cover approximately through section 5 below. There may be a more detailed outline for the second half later.

- (1) Philosophy. Review of probability and statistics.
S&W Chapters 1-3
Wooldridge Chapter 1, Appendix A-D
Lecture notes on pre- vs. post-sample probability, Bayes rule. Likelihood.
- (2) Linear regression.
S&W Chapters 4-7
Wooldridge Chapters 2-4, Appendix E
- (3) Asymptotics for regression. Heteroskedasticity. Robust inference.
Note: S&W present “robust” inference as the main approach, and treat explicit modeling of non-scalar covariance as an advanced topic, while Wooldridge (and this course) do the opposite. So this section and the previous one do not cover the same material in the two texts, though together they cover more or less the same ground.
S&W Sections 18.1-18.6, Chapter 17, section 11.1
Wooldridge Chapters 5-8
- (4) Nonlinear regression; logit; probit
S&W Chapters 8 and 11
Wooldridge sections 17.1-2.
- (5) Instrumental variables, simultaneity
S&W Chapters 12 and 13
Wooldridge Chapter 15, sections 16.1-4
On this topic, Wooldridge 16.1-4 covers material not in S&W, and S&W 13 covers material not in Wooldridge.
- (6) Time series and time series regression
S&W Chapters 14, 16
Wooldridge, Chapters 10-12, 18
- (7) Panel data
S&W Chapter 10
Wooldridge Chapters 13-14