University of California, San Diego
Department of Economics
Summer Session I 2016

ECON 120B: Econometrics

Prof. Augusto Nieto Barthaburu
Lectures: MW 11:00-1:50 PM at CSB 002
Discussion section: Tu 10:00-11:50 AM (for location, please see below)
Email: anieto@ucsd.edu
Office Hours: MW 2:30-3:30 PM
Office: Sequoyah Hall 244
Website: tritoned.ucsd.edu

Text

Introduction to Econometrics, 2nd Edition, by Stock and Watson. Copies of the textbook are available on reserve at Geisel Library.

Software

Practical learning will require a software package called *Stata*. *Stata* is essential for problem sets, so you need to be able to access *Stata* in a lab. ERC 117 has it, and some other labs around campus do too. You can also purchase your own copy from http: //www.stata.com/.

We will do an introduction to Stata in the first discussion section. Also, there are many useful introductory Stata tutorials online. One of them can be found at http://data.princeton.edu/stata/

Course Description

This course prepares students for practical empirical research in an academic or business setting. It covers four major ideas in econometrics: quantifying uncertainty using confidence intervals, using regression to infer causal relationships, omitted variable bias, and using regression for prediction. We will also cover advanced concepts such as heteroskedasticity.

Grading

Problem Sets: 20%
Midterm: 30%
Final: 50%

The midterm exam will be in lecture time on Wednesday, July 13. Please refer to Tritonlink for the date, time and location of the final exam.

Homework

Homework is an integral part of this course--the best (maybe the only) way to learn econometrics is to practice it. The assignments will be posted on the course's website. Students may work together on problem sets, although solutions must be written up and handed in separately (including any computer output). It is a good idea to attempt the

problems on your own before meeting with a group, so that you fully understand them (and can help out your friends). While you may collaborate with others, any homework you turn in must represent your own work.
Solution keys to the homework will be posted on the class web page. Your answers will be due **at the beginning of class** the day HW is due. Late problem sets will not be accepted for any reason; if you cannot attend class, you can either have a classmate turn in your homework for you, or you can turn it in on a previous day. Emailed homework will not be accepted.

Discussion sections:
The location for the first discussion section, on Tuesday 6/28, will be the computer lab at ERC 117. Please check tritoned for information on the location of subsequent discussion sections. We may hold some later sections in the computer lab as needed.

Teaching Assistant

Name	Email	Location	Office Hours
Yann Panassie	yannp@ucsd.edu	Sequoyah Hall 233	Friday 12:00-2:00 PM

Future Opportunites
Econ 120BH: If you earn an A+/A/A- grade in my class this quarter, I recommend that you take the one-unit honors class 120BH in the winter and the 120CH in the spring. Honors classes are capped at 20 students and you will get to know the faculty member well (important for getting letters of recommendation). These classes typically have you give a short presentation and write a short paper. Presenting and writing in the major are two valuable skills. I recommend you take advantage of the 120BH and 120CH opportunities.

There are other honors sections for the core Economics courses that you may also consider. The full schedule of honors sections is the following:
100AH and 120AH: fall
100BH and 120BH: winter
100CH and 120CH: spring
110AH and 110BH —both in winter

Administrative Issues:
1. If you have a documented disability, please bring your documentation and come to talk to me as soon as possible so that I can make suitable accommodations for you.

2. If you arrive late to an exam, I will allow you to take the exam in the time that remains as long as no one has turned in his/her exam and left the room. If a classmate has already turned in his/her exam and you arrive late, you will earn a zero on the test.

3. **There will be absolutely no makeup exams.** If you have to miss a midterm **for a medical or other University approved reason**, the weight will be allocated to the final exam. In that case, you will need to provide proof of your situation. The weights will not be reallocated for any other reason.

4. All students must take the final exam at the scheduled date and time, so if you have any conflicts with other exams you are advised not to take this course (or the other courses that this course's exam conflicts with).

COURSE OUTLINE

1. Introduction: Why Study Econometrics?
Demand for Coffee.
Who needs data anyway? If you had some, what would you do with it?
Econometric models, parameter estimates, prediction and the testing of economic theories.
Getting good data.
Experimental vs. nonexperimental data. Cross-sections, Time-Series, Panels.
Reading: *Stock & Watson* - Chapter #1.

2. Probability and Statistics: A quick review
Probability, random variables, the normal distribution and the central limit theorem, inference, confidence intervals and hypothesis testing. Asymptotics of the sample mean.
Reading: Chapters #2 and #3.

3. Simple Regression (one regressor)
Fitting a line through a cloud of points.
Least squares, unbiased estimates, consistent estimates, confidence intervals, hypothesis testing, omitted variable bias, R^2.
Reading: Chapters #4 and #5.

4. Multiple Regression: Estimation
The second explanatory variable, interpreting coefficients, omitted variable bias.
Efficiency & heteroskedasticity.
Reading: Chapter #6.

5. Causal Inference and Random Assignment
Random assignment vs. omitted variable bias.
Reading: Ch #13.

6. Multiple Regression: Inference and Nonlinearity
Confidence intervals (CI) for parameters, CI for predictions, hypothesis testing, single (t) vs. multiple (F) tests.
Etiquette in reporting results. modeling nonlinear functions. interaction terms between independent variables
Reading: Chapters #7 and #8.

7. Sources of Bias: measurement error, sample selection, simultaneity and omitted variables
Omitted Variable Bias again, measurement error, fixed effects, sample selection, simultaneity.
Reading: Chapters #9 and #10.