University of California, San Diego
Department of Economics
Fall 2018

ECON 120B: Intermediate Econometrics

Prof. Augusto Nieto Barthaburu
Email: anieto@ucsd.edu
Lectures: MWF 3:00-3:50 PM at CSB 001
Office Hours: M 10:00-11:30 AM
Office: Economics Bld. 113

Text
James H. Stock and Mark W. Watson: *Introduction to Econometrics*, updated 3rd Edition, Pearson/Addison-Wesley. There will be an e-book available in TritonEd, via the RedShelf system that you can purchase for $22.38 which gives you 12 weeks access (there will be a link on the left hand side of the TritonEd page). **This is an opt-out system**, so you must click on the RedShelf link and opt out before two weeks are up or you will be charged for the textbook access by UC San Diego.

Copies of the textbook are available on reserve at Geisel Library.

Software
Practical Econometrics learning will require a software package called STATA. STATA is essential for problem sets. There is a campus-wide license for STATA/SE 15, so you can install a copy of it on you own computer. The license information is posted on TritonEd.

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

Course Description
Econ 120B aims to prepare you for practical empirical research in an academic or business setting. It introduces three basic concepts in econometrics: quantifying uncertainty with confidence intervals; using regression to infer causal relationships; and using regression for prediction. It teaches competency in STATA, which is the main software package used in applied Econometric work.

Course website
We will use a web page located at https://tritoned.ucsd.edu/. We will post information relevant to the course, the syllabus, lecture notes, problem sets and practice tests, solutions, etc. You should check this page regularly.

Grading
Problem Sets (4): 20% total
Midterm: 25%, in class on Friday, November 2.
Final: 55%, please check the schedule of classes for time, date and room.

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
There will be weekly discussion sections for the class. The TA will go over the HW in detail in sections, so it is very important that you attend. Please refer to the schedule of classes for time and location. **You should bring your computers to discussion sections.**

Teaching Assistants

Name	Email	Location	PSET Hours
Julian Martinez Iriarte	jum024@ucsd.edu	Econ 300	Tuesday 6:30-8:30 PM
Pablo Ruiz Junco	pruizjun@ucsd.edu	Econ 300	Wednesday 6:30-8:30 PM
Adam Kesten	akesten@ucsd.edu	Econ 300	Thursday 6:00-8:00 PM

Future Opportunities
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 talk to Brittany Thompson at Sequoyah Hall 245. Bring your documentation with you. Do it as soon as possible so that we 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 by the time you arrive, you will earn a zero on that test.

3. If you have to miss the midterm **for a medical or other University approved reason**, the weight of that exam 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).

5. UCSD now has automated waitlists. If you have any questions regarding adding the course, please contact the undergraduate advisors in Sequoyah Hall 245.

6. **Academic dishonesty will not be tolerated.** Students are expected to do their own work, as outlined in the UCSD Policy on Integrity of Scholarship. All suspected cases of academic dishonesty will be reported to the Academic Integrity Coordinator. In addition to the penalties imposed by the Academic Integrity Review Board, **I also reserve the right to fail students found guilty of academic misconduct**.

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. non-experimental data. Different types of 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. Asymptotic results for the sample mean.
Reading: Stock & Watson - Chapters 2-3.

3. Simple Linear 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: Stock & Watson - Chapters 4-5.

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

5. 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: : Stock & Watson - Chapters 7-8.

6. Sources of Bias: measurement error, sample selection, simultaneity and omitted variables
Omitted Variable Bias again, measurement error, fixed effects, sample selection, simultaneity.
Reading: : Stock & Watson – Chapter 9.