

Economics 120B
Econometrics, Summer Session 2 2012
Troy Kravitz, UC San Diego

Description: This course aims to prepare students for practical empirical research in an academic or business setting. It covers the fundamentals of regression analysis, including estimation and hypothesis testing in a multivariate framework.

The presentation of material and accompanying discussion will be geared toward developing your critical thinking skills: understanding the role and realism of assumptions, developing awareness of the meaning and interpretation of regression output, and thinking about and through well-reasoned alternatives to the econometric exercises. Preparation for the subsequent course in the econometrics sequence, ECON 120C, will be achieved in route to these other goals.

The material can be difficult and the workload substantial, particularly for people who find math courses challenging. However, your payoff for all this work is a set of skills and analytical tools that are extremely useful and in high demand in the marketplace.

Times: Monday, Tuesday, Wednesday, Thursday, 9:30 – 10:50 am, PEPPER CANYON 106
Friday, 8:00 – 9:50 pm, PEPPER CANYON 109

Instructor: Troy Kravitz
office hours: Monday, 11:00 – 12:30 pm
location: Sequoyah Hall 206 (TMC)
email: tkravitz@ucsd.edu

TAs: Guangming Xu
office hours: Wednesday, 11:00 – 12:30 pm
location: Sequoyah Hall 225 (TMC)
email: guxu@ucsd.edu

Sung Je Byun
office hours: Thurs, 1:00 – 2:30 pm
location: Economics Department 116 (TMC)
email: s1byun@ucsd.edu

Class Web Site: ted.ucsd.edu (formerly webct.ucsd.edu)

The class web site will contain the syllabus, lecture notes, homework assignments, and occasional class announcements. You should check it regularly.

Text: Introduction to Econometrics, by Stock and Watson (REQUIRED)
Statistics with Stata: Updated for Version 10, 7th Edition, by Hamilton (OPTIONAL)

The text is available for purchase in the bookstore. Note that it will also be the same text used in the subsequent course in the econometrics sequence, ECON 120C. In addition, there are at least four copies of the text on reserve in Geisel Library should you forget your book at home one day.

Software: Part of the course involves learning to use a software package called *Stata*. *Stata* is essential for problem sets, so you need to be able to access *Stata* in a lab or purchase your own copy. Students have access to *Stata* in ECON 100. The code to enter ECON 100 is 0506438. (Other computer lab locations can be found at <http://micros.ucsd.edu/softwareLookup/index.php?action=loaded&id=3535>). Individual copies of *Intercooled Stata* can be purchased for \$98 from <http://www.stata.com/order/new/edu/gradplans/gp-direct.html>. Alternatively, you can lease *Intercooled Stata* for six months for \$65 from the same site. *Small Stata* will not necessarily be adequate for this class and ECON 120C due to its inability to handle large datasets.

Course Intentions: You are expected to read the chapters in the text ahead of time. You are not expected to master the material contained in the chapter until after the lectures, but you will find the material much easier to comprehend if you've already familiarized yourself with the terminology and concepts before lecture. To that end, the quizzes (discussed below) are meant to provide additional incentives for you to read the text before class. They are designed to reward students who read the chapter ahead of time (as expected) and penalize those that do not.

Homeworks (discussed below) will be more in-depth and will ask you to actually solve problems. The homeworks are not graded on how well you do but more on how hard you try.

Tests are designed as comprehensive mileage posts for you to gauge your progress in the course.

The weekly discussion section is an important part of the course. The interactions will be more "hands-on" and the discussion section leader will provide detailed explanations of solutions. This is a good opportunity to learn how to solve questions similar to those that will appear on the exams.

Homework: Homework is an integral part of this course, because the best way to learn econometrics is to do it. There will be **FIVE** homework assignments during the course. These assignments will be posted on the web, and it is your responsibility to check the class web page for homework assignments regularly.

Homeworks are **SELF-CORRECTED**. They will be assigned, online, on Mondays and due no later than during discussion section on Fridays. Homeworks may be turned in early. Solutions to the homeworks will be posted later in the week, usually on Wednesday. It is your responsibility to correct your answers, in a different color pen. You will not be graded on how correct your original answer was, but, rather, on whether you corrected your answers. Your original solutions and the corrections you made to them should be clearly distinguishable.

Homeworks will be graded on a three-point scale: $\{0,1,2\}$. A score of 0 will be given to homework which is clearly incomplete or not submitted entirely. A score of 1 will be given to homework which is largely complete but not self-corrected. A score of 2 will be given to homework which is complete and self-corrected. Again, note that you are not graded on how accurate your original answers were but on your final, corrected, answers.

You are welcome to work together with classmates on problem sets, although solutions must be written up and handed in separately (including any computer output). A photocopy of a classmate's submission is not acceptable. It is a good idea to attempt the problems on your own before meeting with a group. While you can collaborate with others, any homework you turn in must represent your own work.

If you cannot attend discussion section, you can either have a classmate turn in your homework for you, or you can turn it in ahead of time. Emailed homework will not be accepted.

Quizzes: There will be four, five-question quizzes throughout the course.

The first quiz will take place on Wednesday, August 15. All subsequent quizzes will be on Mondays.

The quizzes are short and are not meant to be comprehensive. Instead, they will ask questions about the textbook chapters that were assigned reading over the weekend. If you read the chapter you should be able to pass the quiz easily.

Tests: There will be three exams during the course.

The first exam will take place on Monday, August 13, and will cover chapters 2 and 3 from the text. This exam will be shorter in duration and lecture will follow the test.

The second exam, a midterm, will take place on Thursday, August 23. In addition to the material tested earlier, it will also cover chapters 4 and 5 in the text.

A comprehensive final exam will take place on Friday, September 7, at 8am (location to be determined).

There will be no make-up exams, and any conflicts or emergencies should be approved by me in advance of the exams. In case of illness or accident at the time of either of the first two exams – with proper documentation from a doctor or the police – the final will be weighted accordingly.

Extra Credit: There will be ample opportunities to earn extra credit throughout the course.

Extra credit will take the form of brief two-question multiple-choice pop quizzes. They will be given randomly throughout the course, not every day and perhaps more than one per day. If both questions are answered correctly, one extra credit point will be awarded. No extra credit is awarded for only one correct answer.

At the end of the course the total number of extra credit points is added up and for every point above four that number will be added to your final exam grade. Thus, a student who earned 9 extra credit points will have five percentage points added to their final exam grade.

Grades: The following weights will be used to determine your course grade:

Homework: 10%

Quizzes: 10%

First exam: 10%

Midterm exam: 25%

Final exam: 45%

Grading Policy: If you think a mistake was made in grading your exam, you may ask for a regrade. You must write out your reason for a regrade and turn it and your exam in within 10 days of when the exam was first returned to the class. Include an email address on your written explanation so we can let you know the result of the regrade. Note that unless your answer is fully correct, the

assignment of partial credit must be a matter for judgment, and we are unlikely to change your grade since we want to treat all class members equally.

Cheating: Cheating will not be tolerated in this class. If you are caught cheating, helping someone else cheat, or plagiarizing on an exam or homework, you will be penalized. One possible penalty is a failing grade in my class.

Miscellaneous: Disabilities will be accommodated; contact the office of undergraduate student affairs in Sequoyah Hall 245. For all matters regarding dropping or adding the course, waitlists etc., please contact the office of student affairs or use the online resources provided by the university.

COURSE OUTLINE:

1. Probability and Statistics: A quick review (Week 1)

Probability, random variables, the normal distribution and the central limit theorem, inference, confidence intervals and hypothesis testing. Asymptotics of the sample mean. Using *Stata*.

Reading: Chapters #2 and #3.

2. Simple Regression (one regressor) (Weeks 2-3)

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.

3. Multiple Regression: Estimation (Weeks 4-5)

The second explanatory variable, interpreting coefficients, efficiency & heteroskedasticity, omitted variable bias.

Reading: Chapter #6.

4. Multiple Regression: Inference and Nonlinearity (Weeks 4-5)

Confidence intervals (CI) for parameters, CI for predictions, hypothesis testing, single (t) vs. multiple (F) tests. Etiquette for reporting results. Modeling nonlinear functions. Interaction terms between independent variables

Reading: Chapters #7 and #8.

5. Binary Dependent Variable Models (time permitting)

Binary dependent variables and why they're different. The Linear Probability Model, including goodness-of-fit. The Probit (and Logit) Models. Maximum likelihood estimation of probit model. Measures of fit.

Reading: Chapters #11.