Syllabus
Economics 103: Introduction to Econometrics
Department of Economics, UCLA
Winter Quarter 2005

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Course Objectives:

Econometrics is concerned with how to learn from economic data. Econometric techniques are increasingly used in business, government and academic settings to analyze markets, create forecasts based on past data, study the effect of economic policies, and test economic theories. A good understanding of econometrics is increasingly valued by employers in many fields.

The main tool of econometrics is regression analysis, which is concerned with uncovering and estimating relationships between different variables. In this course we will introduce regression analysis, emphasizing the intuition behind the procedures and how to apply them to real-world data. You will gain hands-on experience analyzing data and interpreting the results through a series of exercises in which you use econometric computer software to analyze data sets.

Upon successful completion of the course you will:
- Understand the statistical assumptions underlying regression analysis, and when they are appropriate
- Be able to identify when some of the basic regression assumptions may be violated and to correct for that with appropriate techniques
- Have experience with the “art” of modeling data
- Be able to understand, interpret, and evaluate data analysis performed by others
- Be familiar with Stata, a cutting edge econometric software increasingly used in corporate, government, and academic jobs
**Textbook:**

Damodar Gujarati *Essentials of Econometrics* Second Edition

This is among the most basic of econometrics texts. If you are interested in pursuing further work in econometrics or would prefer a slightly more rigorous explanation, a good option is Jeffrey Wooldridge *Introductory Econometrics* Second Edition.

**Discussion Sections/Computer Labs:**

In addition to the two lectures each week, there will be one discussion section a week. You should attend the section for which you have signed up. You may swap sections if you can find someone in the section that you wish to attend who will swap with you and move to the section for which you are signed up. Please inform the TAs in both sections if you make such a swap.

Because the course will focus not only on understanding the theoretical concepts behind regression analysis but will also emphasize developing the practical skills necessary for good data analysis and the ability to interpret these results, discussion sections will include instruction on using econometrics to analyze data sets. You will, therefore, be required to use a computer. Instruction will be provided for Stata for Windows. You are encouraged to learn how to use Stata as it should serve you well both now and in the future. Stata is available on the network at SSC and CLIC. If you choose to, you may also obtain a student copy of Stata for Windows (for approximately $55) which you can install on your own computer. (Doing so is completely optional and is not required). To do so, you can call Stata at 1-800-STATAPC (or visit [www.stata.com](http://www.stata.com)) and order the student version: you will need to tell them that you are a student at UCLA. The student version of Stata has restrictions on the size of datasets it can handle, but this should not be a problem for the purposes of this course.

**Prerequisites:**

Statistics 11. It is assumed that you are familiar with calculus and have had at least one course on probability and statistics concepts. No knowledge of matrix algebra is required. The course will begin with a review of some core statistical material. You should already be familiar with the key ideas that are presented. The material will be discussed in the context of the linear regression model. The second part of the course will apply these statistical tools in a fuller examination of the linear regression model as it is used in economics and the social sciences.
Grade Breakdown

**Problem Sets/Computer Exercises: 30%**

There will be approximately six problem sets. Problem sets are due at the end of class on the specified date and late problem sets will NOT be accepted. You may discuss your homework assignments with other students in the course and form study groups. However, you must do the computer assignments yourself and write up your own answers to all questions. Note: You must turn in a printout of the log file printed directly from stata, showing the time/date of your work.

**Midterm: 20%**

The midterm will be February 10. The midterm is OPTIONAL. If you choose to take it, then the mid-term grade will account for 20% of your course grade as long as that grade is higher you’re your final grade. If your final grade is higher, then only the final grade and problem set grade will be used in the calculation of the course grade. Please mark your calendars, as there will be no make-up exams. You should bring blue books to the exam.

**Final Exam: 50%**

The final exam will be cumulative. The final exam grade will count for the remainder of the course grade: (a) 70% if you choose not to take the mid-term exam (or if the mid-term grade is below the final exam grade); of (b) 50% if the mid-term exam grade is higher than that of the final exam.

The only valid reason for missing an exam is serious illness (as verified in writing by a medical doctor). In this case a make-up will be scheduled.

Academic dishonesty will be handled in accordance with University regulations, with no exceptions.

“Re-grades” will only be undertaken if there is evidence of a grading error. **However, the whole exam will be re-graded, so your exam grade could go down.**

The final exam for this course is scheduled for Friday, March 18, 2005, 3:00-6:00 pm. If you have a conflict and cannot make this exam time (exam code 12), you CANNOT take this course.
Web Page/Discussion Board

Questions regarding the class or homework should be posted on the Class Discussion Board (on the class website). TAs will be monitoring this website, so a response is guaranteed within a reasonable amount of time. Email directly to the Professor or a TA is not guaranteed to be answered immediately.

The website is http://www.sscnet.ucla.edu/05W/econ103-1/

Both the professor and the TAs use the website for posting handouts, lecture notes, problem sets, etc., so monitor the website frequently.

Email to TAs or the Professor must originate from a UCLA account.

Course Outline

1. What is econometrics?
2. Review of Statistics
3. Some Important Distributions
4. Statistical Inference and Hypothesis Testing
5. Linear Regression Model (Univariate)
6. Hypothesis Testing
7. Multiple Regression
8. Functional Form
9. Dummy Variables
10. Multicollinearity
11. Heteroskedasticity
12. Autocorrelation
13. Model Selection
14. Endogeneity