Economics 122A
Applied Econometrics 1
Summer Session II 2008
Course Code: 62135
Course Meetings: MWF 3–4:50
Course Web Site: https://eee.uci.edu/08z/62135
Class Room: DBH 1100

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Office Hours: Tuesday 11 am–12 pm and Wednesday 11 am–12 pm

Teaching Assistants:
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Course Objectives:
This course will provide you an an introduction to econometrics. Unlike some courses you have had, each part of this course builds on previous material, so you should try to keep up with the material. Econometrics is a tool which allows one to use data and statistical techniques to answer real-world questions and test predictions of economic theory. This course is the first in a multi-course sequence on basic applied econometrics. It focuses on applications and interpreting the findings of econometric studies. If you are interested in a more theoretical/mathematical treatment of the topic, you should take the 123 sequence.

The goal of this class is for you to be able to understand the linear regression model, use it to analyze data, and critically assess studies using linear regressions (read a description of a study, assess whether you believe the results to be causal, and point out any possible issues with it).

An important part of the class will be using a statistical package (EVIEWS) to analyze data and perform econometric analysis. Econometrics is used in business, government, and academia for purposes such as studying the effects of government policies, using historical data to forecast future values of variables such as the stock market, analyzing markets, and testing the predictions of economic theory. Knowledge of econometrics and how to analyze data is valuable for many types of jobs. Knowing a software package such as EVIEWS is also valuable to employers. An introduction to EVIEWS will be presented in the first discussion section and examples from EVIEWS will be used throughout the course.

We will cover the following topics: the linear regression model, hypothesis tests in the case of linear regression, and confidence intervals in the linear case. The second quarter of this sequence will cover nonlinear regressions and a variety of other assorted techniques.

The class prerequisites include probability and statistics (e.g., Economics 15A and 15B), and calculus. The textbook reviews some basic probability and statistics. These will also be covered in the first few classes and discussion sections.

Required Textbook:
Introduction to Econometrics—**2nd Edition, by Stock and Watson**
The first edition of this text is readily available on Amazon.com and other used book sites. You are responsible for material in the second edition (in particular, material and homework questions). You may come by my office hours to examine a copy of the second edition.

We will cover the material in Chapters 1–7 of Stock and Watson. There is a website with companion material to the text under "Student Resources" at
http://wps.aw.com/aw_stockwatsn_economtrcs_1/4/1138/291480.cw/index.html.

Required software package: **EVIEWS**
EVIEWS is available in the Social Science Computer labs and is also available at the UCI bookstore at a large discount. Empirical exercises **must** be completed using EVIEWS. If you took Economics 15A and 15B, you are already familiar with EVIEWS. Learning to use EVIEWS will take some time and effort. It will be covered in the first discussion section. Here are some links to help you use EVIEWS:

Guide to using EVIEWS: http://faculty.washington.edu/ezivot/eviews.htm
EVIEWS website: http://www.eviews.com

Optional other textbooks:
There are a number of other books on this topic. Two I recommend are *Introductory Econometrics* by Wooldridge or *Essentials of Econometrics* by Gujarati.

Grading Policy:
Your grade will be based on the best 3 of 4 problem sets (total of 25 percent), attending discussion sections (total of 5 percent), one in-class midterm (30 percent), and a final exam (40 percent). The final will be cumulative, but more heavily weighted toward the second half of the class. Evidence of improvement over the semester may help your grade. The grades will be decided based on both the distribution of scores in the class and my assessment of how well the class understands the material. There will also be opportunities for extra credit offered in class and through on-line quizzes.

Exams:
There will be one **in-class** midterm in the class on **Wednesday August 20**. The final will also be **in class** during the University's assigned finals period on **Wednesday September 10**. The final will be cumulative, but with more emphasis on the material in the second half of the course.

Exam Policy:
There will be no rescheduling of exams. If you are unable to attend the in-class midterm or in-class final exam, you must provide a legitimate excuse, such as a note from your doctor.

Any doctor's note must include a privacy waiver form allowing the School of Social Sciences to call the doctor's office to verify the authenticity of the note. There will be no makeup exams. If you have a valid excuse for missing the midterm, all of the exam part of your grade will be determined by the final exam.

Discussion Sections:
The discussion sections are **mandatory** and attendance counts for 5 percent of your final grade. I recommend attending them; the two TAs will provide help with the material in class, problem sets, and EVIEWS.
Teaching assistant and locations of sections:
62136 Dis B1 Monday 5-5:50 MSTB LAB A, Payel Chowdhury
62137 Dis B2 Wednesday 5-5:50 MSTB LAB A, Nilopa Shah
62138 Dis B3 Tuesday 11-11:50 SST 155, Payel Chowdhury
62139 Dis B4 Thursday 11-11:50 SST 155, Nilopa Shah
62142 Dis B5 Thursday 5-5:50 SST 155, Nilopa Shah
62144 Dis B6 Tuesday 12-12:50 SST 155, Payel Chowdhury

Homework:
There will be 4 problem sets, but I will only count the best 3 out of four problem sets towards your grade. They will be due by the end of class on the date they are due in the classroom. **They must be turned into your TA by 4:50 pm at the latest on the day they are due.** Late homework will receive no credit (but remember that you can drop the lowest homework score). The problem sets will come from the text and elsewhere. You may work together on the problem sets in groups up to size 4, but you will have a difficult time on the exams if you do not understand the homework material. Everyone must turn in their own write ups of the problem sets, and must note who they worked with on their problem set. It will be impossible to get better than a 6/10 on the homework without making a substantial attempt to complete the EVIEWS exercises.

Due dates for problem sets are as follows:

1. Problem set 1: Monday August 11 by the end of class
2. Problem set 2: Monday August 18 by the end of class
3. Problem set 3: Friday August 29 by the end of class
4. Problem set 4: Monday August 8 by the end of class

Attendance and Class Participation:
I expect you to attend class, and you will be responsible for material covered in class that is not available in the text or elsewhere. Please ask questions if there are things you do not understand. Please get notes from someone else if you miss class, I probably will not be handing out or posting lecture notes.

Please turn off your cell phones or put them on vibrate and be courteous to me and your fellow students in your use of other electronic devices.

Grading Questions:
If you think that your exam has been graded incorrectly, you must write up why you think so, and give this to me within 1 calendar week of getting the exam back. Note that your entire exam is open to regrading, so your grade could go down as well as go up.

Academic Honesty:
All students should be familiar with the University's policy on academic honesty, http://www.editor.uci.edu/catalogue/appx/appx.2.htm.
If the TA or I discover any evidence of cheating, dishonest conduct, plagiarizing, or inappropriate collusion on exams, the students will be given Fs, and otherwise sanctioned to the full extent possible. These terms are explicitly defined at the URL above. Note that cheating includes use of cell phones, PDAs, portable music devices, any other unauthorized book, papers, or device. Leaving the exam room before turning in your exam is cheating.

Drop Policy:
Summer session policy is that you can drop without the instructor's signature until August 22, and that the last date for any further changes is August 29. The first two homeworks and the midterm are before August 22, so hopefully you will have a sense by then of what the class will be like.

Schedule:

- Introduction to econometrics (Chapter 1)
  - Examples of questions econometrics can be applied to
  - Causal effects
  - Data sources and types
- Review of probability (Chapter 2)
  - Probability distributions, expected values, means and variances
  - Joint and marginal distributions, independence, covariance, correlation
  - Specific distributions
  - Random sampling, sampling distribution of the sample average
  - Large sample approximations, the law of large numbers, consistency, central limit theorem
- Review of statistics (Chapter 3)
  - Estimators, bias, consistency, efficiency
  - Hypothesis testing with the mean

  - Sample variance, standard deviation, standard error
  - Confidence intervals for the mean, comparing means
  - Looking at data

- Linear regression with one regressor (Chapter 4)
  - Ordinary least squares (OLS), measures of fit
  - Assumptions behind OLS, when might they fail?
  - Sampling distribution of OLS estimators

- Hypothesis tests and confidence intervals for the one regressor linear model (Chapter 5)
  - Two-sided and one-sided tests, t-statistics, p-values
  - Confidence intervals for the regression coefficients
  - Dummy variables
  - Homoskedasticity, heteroskedasticity and the linear regression model

- Linear regression with more than one regressor (Chapter 6)
  - Omitted variable bias
  - OLS in multiple regression, measures of fit
  - Assumptions behind OLS with multiple regression, when might they fail?
  - Sampling distribution of OLS estimators with multiple regression
  - Multicollinearity

- Hypothesis tests and confidence intervals with multiple regression (Chapter 7)
  - Tests and confidence intervals for a single coefficient
  - Tests of joint hypotheses
  - Testing restrictions involving more than one coefficient, confidence sets
  - Model specification