

**EC 508. Econometrics. Professor R Lucas. Fall 2015**  
**Monday and Wednesday 9-10.30**  
**ROOM CAS 314**

**Office hours**

Monday 10.30-12.30 and Wednesday 8-9, room 500, 264 Bay State Rd.

**Course content**

EC508 is an introduction to regression analysis for economists. The course will start with the basic theory of ordinary least squares regression, inference from these estimates, specification and interpretation of multiple regression estimates. Following this, various problems in estimation, both in cross-sectional and time-series data, will be considered, including: collinearity, heteroscedasticity, autocorrelation and errors in measurement. Other topics to be covered include dependent dummy variables, distributed lags and estimation of simultaneous systems. Throughout, students will use Stata software to explore these estimation methods.

**Preparation**

Math: Matrix algebra will not be used. However, students will be expected to be comfortable using basic algebra (such as polynomials, summation notation and logarithms) and some differential calculus (including partial derivatives and first-order conditions for minimization).

Statistics: A brief review will be offered, but students should be familiar with the normal distribution, t-statistics and F-statistics and their use in hypothesis testing.

Economics: Familiarity with basic micro and macro economics will be assumed.

**Requirements**

The requirements for this course are threefold: a midterm examination, a final examination and a series of problem sets.

The mid-term examination will be held during class time on **Wednesday, October 14<sup>th</sup>**.

The final examination is **TBA**.

The grade for the course is determined entirely by your examination results, subject to completion of all problem sets. The mid-term examination will comprise 40 percent of the total grade; the final examination will comprise the remaining 60 percent of the grade. The final examination is cumulative.

Both examinations are required. The only excuses for missing an exam are serious illness or a family emergency. No make-up exam will be set for the midterm. Instead, students unable to attend the midterm examination for a legitimate reason will receive a course grade determined by performance on the final examination. Students entitled to extra

time on examinations should inform Professor Lucas of this in the first two weeks of classes.

Written solutions to all problem sets will be collected during class time. Failure to hand in ALL solutions on time will result in a reduction in the final grade.

**Text:** The required textbook for this course is:

D.N. Gujarati, *Basic Econometrics*.

This book is available at the Barnes and Noble at BU Bookstore

### **Academic conduct**

You need to read the CAS Academic Conduct Code, which you can pick up in room CAS B3. Academic misconduct involves not only direct cheating on tests, but some more subtle acts as well. All work handed in for credit must be your own, with the exception that you may quote or paraphrase from other sources if you also cite the reference and page number. (It is not permissible, however, to use another student's work even if you cite that work.) Your consultations with classmates should be limited to general discussions. I will report cases of suspected academic misconduct to the Dean's Office. Confirmed cases of misconduct will result in a failing grade on the exam or assignment.

### **Topics and Readings**

SEP	2	Organization meeting
	9	Chapter 1: Nature of Regression Analysis and Chapter 2: Some Basic Ideas
	14	An introduction to Stata
	16	Chapter 3 (including appendix): The Problem of Estimation
	21	Chapter 4: Classical Normal Linear Regression Model
	23	Chapter 5: Interval Estimation and Hypothesis Testing
	28	Chapter 6: Specification and Interpretation
	30	Chapter 7: Multiple Regression
OCT	5	Chapter 8: The Problem of Inference
	7	Chapter 9: Dummy Variables
	13	Review (Note Tuesday class)
	14	<b>Midterm Examination</b>
	19	Chapter 10: Multicollinearity
	21	Chapter 11: Heteroscedasticity
	26	Chapter 12: Autocorrelation
	28	Chapter 13: Specification and Measurement error
NOV	2	Chapter 13: (continued)
	4	Chapter 15: Dependent Dummy Variables
	9	Chapter 16: Panel Data
	11	Chapter 17: Distributed Lags
	16	Chapter 17: (continued)
	18	Chapter 18: Simultaneous Equation Models
	23	Chapter 19: Identification
	30	Chapter 20: Estimating Simultaneous Equation Models
DECC	2	Chapter 20: (continued)
	7	Chapter 21: Time Series
	9	Review