

## ECONOMETRIC METHODS SYLLABUS

**Course Goals:** (1) To be able to perform estimation and testing in basic linear cross-section regression models, (2) to understand the theory underlying ordinary least squares (OLS) using matrix algebra. This course is the foundation for any subsequent regression / econometrics class.

**Pre-requisites:** A solid foundation in statistics is required (the listed pre-requisite is ECN/ARE 239). Additionally I assume previous exposure to linear regression and to matrix algebra. If your preparation in these areas is thin then work hard in the first two weeks to come up to speed.

**Course Outline:** Basic two variable linear regression model is assumed.

Class 0

Classes 1-3    3 classes    Least Squares Regression with Matrix Algebra  
Greene 7th Ed 2.1-2.4, 3.1-3.7, Appx A.1-A.4

Class 4-6    3 classes    Finite Sample Properties of Least Squares  
Greene 7th Ed 4.1-4.3

Classes 7-9    3 classes    Large Sample Properties of Least Squares  
Greene 7th Ed 4.4, Appx D.1-D.4

Class 10    1 class    Midterm Exam

Class 11-12    2 classes    Tests of Linear Restrictions  
Greene 7th Ed 5.1-5.6, Appx B.10-B.11

Class 13-14    2 classes    Practical Issues  
Greene 7th Ed 4.7 (data problems), 4.6 (prediction),  
6.2-6.3 (data transformation and indicator variables)

Class 15    1 class    Model Specification Error  
Greene 7th Ed 4.3, 8.2

Class 16    1 class    Instrumental Variables (IV) Estimation  
Greene 7th Ed 8.1-8.3

Class 17    1 class    Maximum Likelihood (ML) Estimation  
Greene 7th Ed 14.1-14.3, 14.9.1

Class 18    1 class    Generalized Least Squares (GLS)  
Greene 9.3

Class 19    1 class    Heteroskedasticity  
Greene 9.3-9.6

Class20          1 class          Autocorrelation  
Greene 20.1-20.5, 20.7-20.9

**Required Material:**

Greene, W.H. (2011), *Econometric Analysis*, 7th edition, Prentice-Hall.  
Older editions are fine, even much older editions are fine. My assignment questions do not come from Greene.  
Over time, however, Greene is better organized and brings in newer material.  
If you have money, buy the 7th edition. If you don't then use an earlier edition.

Greene is the standard text for this course at any economics Ph.D. program. Greene is as much a reference source as it is a textbook, and the chapter sections given above include in places more material than we will cover. What you really need to know is the material I cover in lectures.

Especially for those with a thin background in econometrics a more introductory book will be helpful.

Undergraduate texts such as Stock and Watson or Wooldridge are good, but they do little matrix algebra which is a big part of this course.

A book with matrix algebra I like is Johnson, J. and J. Dinardo (1997), *Econometric Methods*, 4th edition, McGraw-Hill, but this is out of print.

**Additional Material:**

Assignments and datasets and exam scores will be posted at Smartsite.  
Also at <http://www.econ.ucdavis.edu/faculty/cameron/e240a/e240a.html> I have provided a review of bivariate regression; some other lecture notes (especially on asymptotic theory); and past exams and solutions.

**Computer Materials:**

This course will use STATA ([www.stata.com](http://www.stata.com)), the leading all-purpose econometrics package for analysis of cross-section data and short panels. Often complete programs will be provided and the assignments will concentrate on interpretation of the output. Stata is available on both PC and Unix platforms for ECN and ARE students.

**Course Grading:**

Assignments 18%  
Best 6 out of 7. Last assignment is compulsory. Each worth 3%.  
Due Thursdays Jan 17, 24, Feb 5 (Tues), 21, 28, March 7, 14.

Midterm 32%  
Thursday Feb 7 10.00 – 11.50 p.m. Closed book exam.

Final 50%  
Thursday March 21 3.30 – 5.30 p.m. Comprehensive. Closed book exam

Assignments must be handed in on time, so solutions can be discussed in class and distributed in a timely manner.

No credit for late assignments.

Academic integrity is required. What is academic integrity? See the UCD Student Judicial Affairs website <http://sja.ucdavis.edu/integ.htm>.

As an exception to their rules, I permit some collaboration with other students in doing assignments, but the work handed in must be your own. Each person must create their own Stata output and write up their own answers. And you are to write on your assignment the name of the person(s) you worked with.