

**ECONOMICS 141**  
**Econometric Analysis**

**Description:** This course will introduce the statistical analysis of linear models, as applied to economic data. Though much of the course will be devoted to derivation of econometric theory, applications of this theory to particular problems in the analysis of economic data will also be presented.

**Prerequisites:** Statistics 20 and Math 53-54 or the equivalent. The first few lectures will review the pertinent material from statistics; students must be comfortable with these basic concepts of probability theory and statistical inference, and, more generally, with mathematical derivations and arguments. Matrix algebra and multivariate calculus will be used later in the course.

**Course Requirements:** The grade in this course will be based on two midterm exams (worth 40% of the grade), a final exam (35%), and performance on (approximately) biweekly problem sets (25%). The midterm exams will be held in class, on **October 2** and **November 13**. There will be no makeup exams; scheduling conflicts should be discussed with the instructor or GSI at least a week prior to the exam. Regular attendance at the discussion sections is important; in addition to reviewing the answers to the problem sets, the GSI will discuss the computer software needed for some of the problem sets.

**Required Text:** R.S. Pindyck and D.L. Rubinfeld, *Econometric Models and Economic Forecasts*, Fourth Edition (McGraw-Hill, 1997).

**Recommended Texts:** Goldberger, A.S., *A Course in Econometrics* (Harvard, 1991).

J.H. Stock and M.W. Watson, *Introduction to Econometrics* (Addison-Wesley, 2003).

**Course Website:** [http://emlab.berkeley.edu/users/powell/e141\\_f08/e141.html](http://emlab.berkeley.edu/users/powell/e141_f08/e141.html)

**COURSE OUTLINE**  
**(two to three weeks per topic)**

- 1. Review of Probability and Statistical Inference** (P&R, Ch. 2): Random variables, expectation and variance rules, point and interval estimation, univariate hypothesis tests.
- 2. Simple Linear Regression** (P&R, Ch 1,3): Least squares estimation, statistical properties of the estimates, goodness of fit.
- 3. Multiple Regression** (P&R, Ch. 4,5): Elements of matrix algebra, estimation of regression coefficients, tests of linear restrictions, dummy variables, prediction.
- 4. Departures from Basic Assumptions I** (P&R, Ch. 6): Nonnormality, heteroskedasticity, serial correlation, lagged dependent variables.
- 5. Departures from Basic Assumptions II** (P&R, Ch. 7): Nonlinearity, omitted variables, measurement error, simultaneous equations, limited dependent variables.
- 6. Advanced Topics** (P&R, Ch. 8-12): Forecasting, time series models, panel data, nonlinear models, simultaneous equations.