



## **Economics 570**

### **Econometrics - - Economic Applications of Statistical Analysis**

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#### **Information**

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**Prerequisites:** Econ 410 and 420 (Intermediate Microeconomics and Macroeconomics) and at least one semester of differential calculus.

#### **Introduction:**

This course develops statistical and empirical methodologies for analyzing data in order to test economic and financial hypotheses, make policy recommendations, and forecast unknown events. We review statistical theory of estimation and hypothesis testing. We then proceed by studying classical linear regression theory: the theory and practice of building, estimating, and testing econometric models of economic data/information/behavior. The theoretical topics covered in the course prepares the students for more advanced topics associated with the econometrics analysis of economic behavior in, for example, labor economics, macroeconomics and finance. Throughout the course we will pay close attention to the details of conducting empirical work in economics and econometrics with real-world datasets using computational software. With this in mind, assignments will frequently focus on empirical and computational demonstrations of the theory studied in lecture.

#### **Course Information**

Homework assignments, answer keys and announcements will be posted on the course web-site. Check the web-site each week for updates.

#### **Required Test Book**

"Introduction to Econometrics" (3rd edition, or latest) by Christopher Dougherty

#### **Software**

We will use STATA, a major econometrics software with command prompt (instantaneous commands, one-by-one) and programmable interface (for writing and storing code to run more detailed programs). Students must obtain STATA on their own: 30% of the course grade will be based on econometric software use.

Interested students may want to purchase the software EVIEWS, which is designed for more advanced forecasting applications including extremely quick, clear, elegant graphics. Note: *EVIEWS is not required*, but will add to the serious student's repertoire of skills. EVIEWS can be purchased from the manufacturer for about \$40 for students (there are some limitations to this version: datasets can only have a limited number of observations, for example (i.e. not above  $n = 1000$ )). For a manufacturer link, go to my web-site and on the left-hand-side window look under "Software".

### Course Structure

There will be 2 tests (*one midterm = 30% and one final = 40%*), occasional mathematical assignments and data analysis exercises (*worth 30% of the final grade*).

Under no circumstances will late homework assignments be accepted, including legal/medical emergencies and school sanctioned events. Students can, however, turn homework in early. Homework cannot be emailed (I will delete the email without even reading the attached homework), cannot be placed in my mail box, nor placed under the door of my office. There are no exceptions.

An case of emergencies or school sanctioned events, with a valid excuse (i.e. written proof) students may have their homework grade re-weighted.

### Quiz Policy

I hold the right to give pop quizzes at any time, unannounced (hence, "pop"). I will never announce them, so do not ask. In the past I have given anywhere from 0 to 4 quizzes, each worth one homework assignment.

### Tentative Lecture Schedule

Week	Topic	Chapter (text book)
1	Statistics review: probability, estimation	1
2	hypothesis testing	
2-3	Linear Regression Model	2, 4
3-4	Properties of OLS Estimators	3
5	Inference with OLS Estimators	3
6-7	Model Selection, Transformations	5, 7
8	Dummy Variables	6

9-10	Heteroscedasticity	8
11	Distributed Lag Models	12
12-13	Serial Correlation	13
13-14	Qualitative and Limited Dependent Variables	11