

## Economics 570

### Econometrics - Economic Applications of Statistical Analysis

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#### 1. Information

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#### 2. Exam Dates

Midterm Exam: Thurs. Oct. 10 : during the normal lecture time.  
Final Exam: Sat. Dec. 7 at 12pm-3pm : in the normal classroom

#### 3. Prerequisites

Econ 400 (Statistics), Econ 410 and 420 (Intermediate Microeconomics and Macroeconomics), and at least one semester of differential calculus.

#### 4. 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.

#### 5. Course Resources

Consult the Resources link for STATA resources, assignments and answer keys (once they are posted), practice exams, course data sets and online data set links.

#### 6. Required Test Book

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

## 7. 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. See below for options for obtaining STATA.

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".

## 8. STATA

Students are required to use the STATA econometrics/statistics programming package. In principle you can use any version available to you, but I will only provide documentation for STATA 11 or the most recent version (the commands do change with higher versions).

General details on STATA can found at the manufacturer's website: <http://www.stata.com/>  
There are three types of STATA 11, depending on data needs: Small STATA 11, STATA IC 11 and STATA SE 11.

Small STATA 11 handles *too little data* (hence "small"). It will *not* be able handle all of our needs. *Do not buy it!!!!*

STATA SE 11 handles massive data sets and is therefore expensive. *We do not need such power!!*

STATA IC 11 is cheaper and handles less data than STATA SE 11, but it is perfectly adequate for all that we do. I use it!!!

You can purchase **STATA IC 11** for as low as about \$70, depending on the type of license you want (*6 month* = \$70, *12 month* = \$100, *perpetual* = \$200: if you even remotely think you will use STATA in the future, and given the high marketability of such a skill, I would buy a *perpetual* license).

Go to [STATA Gradplan](#) to view options for *student purchases*.

**BUY IT SOON**: there will not be any homework extensions if you decide to wait.

If you want to buy it via UNC, go to [UNC Software Acquisition](#). Their links simply sends you to STATA's web-site.

You can also use UNC's computing network for free via Emerald (there is a learning curve for figuring this out). It is necessarily less elegant than the Windows variety you can purchase, but it is free. Similarly, there is the Virtual Computing Lab at [UNC VCL](#). Again, there is a learning curve, but it is free.

**WARNING:** if you use campus computing facilities for STATA (e.g. VCL) you do so at your own risk. Late assignments are never accepted under any condition, including a facility shut-down, or document loss, etc. The safest thing to do is to buy STATA and use it at your leisure. Or use campus facilities *early*, and not at the last minute.

## 9. STATA Write-Up

Before you do any STATA write-up for homework assignments, consult the [Write-Up Examples](#) and the [STATA: Bad/Good Writeup](#) documents to see what clean, compact write-ups look like, and what bad write-ups look like. Since this is a 500-level course, grading on these write-ups will be very strict.

Your STATA grade will be based 50% on the accuracy of what you did, and 50% on the write-up itself.

**NEVER JUST COPY-PASTE STATA OUTPUT:** if all you do is copy-paste STATA output your grade will be 0. The main problem is the output looks terrible, and it always contains far more than was asked for. Also, it will likely always be the case you do not even recognize much of the output. Thus, take what STATA provides and condense and present the material in neat tables, or graphs, as the per the assignment.

**NEVER REPORT OUTPUT YOU DO NOT UNDERSTAND.** This goes with the above: if you do not understand the output, odds are you were not even asked to report it. Only report what you are asked to do. And report that material very neatly.

## 10. 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.

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

## 11. 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.

## 12. Late Assignments

Late assignments are never accepted. *Assignments placed in my mail box, or slid under my office door, are treated as late*, no matter what, *no matter when or why they are place there*. You may never use my mail box or slide material under my door. These will be *thrown away*. If you have a documented emergency, once you are able to contact me I will then re-weigh your homework score.

## 13. 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