

Economics 570
Applied Econometric Analysis
Jonathan B. Hill
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1. Information

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2. Prerequisites

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

3. Personal Electronic Devices

Unless explicitly authorized by me (the professor), you are not permitted to use a laptop computer, tablet computer, smart phone, or cell phone during class. Watching movies and videos, playing games, checking the scores on espn.com, shopping, and chatting with your friends are disruptive behavior that will not be tolerated.

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 later) 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.

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. You need to obtain a copy of, or access to, **STATA IC 16 or a similar recent version**.

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 \$95/year.

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.

8. 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.

9. 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 official documented proof) students may have their homework grade re-weighted.

11. Quiz Policy

Pop quizzes can be given on any day, at any time, unannounced (hence, “pop”). I will never announce them, so please 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 |