

## ECONOMICS 400: ECONOMIC STATISTICS

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This is the required introductory course in economic statistics for economics majors. It introduces students to the basic concepts of statistical description, probability theory, and statistical inference as they apply to economic analysis. In particular, the course will emphasize regression analysis, since economics students will be exposed to many regression-like analyses in their upper division economics courses. My goals for students in the course are twofold: (1) to achieve a rigorous understanding of the foundations of statistical theory, and (2) to gain real facility in performing statistical analysis on the computer. By the end of the course students will be both confident and capable using a sophisticated statistical software package to the point that they will be able to use it routinely in other courses and activities.

The format of the course is lecture/discussion and laboratory. Most weeks the laboratory will take place when/where you wish. All you will need will be your computer, the Stata program on your computer and the lab manual. There will be a final exam (35% of the final grade), two midterm exams (25% each), laboratory/problem sets (15%), and a "qualifying exam" that tests the student's ability to use the software package. *There are no make-up exams for missed midterms.* Students with an approved excuse for a maximum of one missed exam may have extra weight placed on the final exam, which must be taken at the regularly scheduled time and place. The qualifying exam will be "pass-fail"; however, students must pass this examination before they can receive credit for the course. *You must complete the qualifying exam before you will be allowed to take the final exam.*

*Materials for Purchase:*

### Required Texts and Software:

Required material for this course consists of two books and statistical software program (Stata). The Groebner text comes bundled with online access to MyStatLab, an online homework program that we will use. One of the following two packages (Groebner text + Hamilton book + Stata program):

Package 1:

David F. Groebner, Patrick W. Shannon, Phillip C. Fry, and Kent D. Smith, "Business Statistics: A Decision-Making Approach. (9th Edition) Prentice-Hall 2014. ISBN:9780133098785 – (Printed textbook + MyStatlab with ebook) + Hamilton book + Stata program.

Package 2:

David F. Groebner, Patrick W. Shannon, Phillip C. Fry, and Kent D. Smith, "Business Statistics: A Decision-Making Approach. (9th Edition) Prentice-Hall 2014. ISBN:9780133098785 – (MyStatlab with ebook only). + Hamilton book + Stata program.

You could buy a used copy of the Groebner book (9th edition), but you must also buy *mystatlab* and the combination could be more expensive than the packages above.

**Lab/Reference Manual:** Lawrence C. Hamilton, *Statistics with Stata: Updated for Version 12*. Brooks/Cole Cengage Learning 2013. ISBN13: 978-0-8400-6463-9. (Also available as an e-book see <http://www.cengagebrain.com/shop/search/9780840064639>)

**Required Statistical Software:** This course will provide intensive instruction in the use of the Stata statistical package. Stata is an extraordinarily powerful statistical tool that comes in various versions. Ordering instructions and descriptions of the options available are contained in a separate handout. **Purchase of Stata is required for all enrolled students. I will assume that you have Stata available on your computer.**

**Your E-mail Address:** Every student must have a functioning UNC e-mail address, and you *must* be reachable through that address. Your UNC e-mail address must be the address that accompanies the official UNC on-line class roll.

**Mac vs. PC:** The University provides and supports Windows PCs to faculty. All course material is guaranteed to work on Windows PCs. Mac users having trouble with course material should consult User Services in the basement of the undergraduate library. In particular, the standard web browser on the Mac apparently does not refresh web pages automatically. If you're having trouble accessing course web material, try *refreshing* the course web page.

A course outline and schedule follow. Both are *tentative* at this point. If we deviate from the schedule, I will keep you informed as to where you ought to be.

## Tentative Course Outline

Tuesday			Thursday		
Activity/Date	GSFS text	Hamilton**	Activity/Date	GSFS text	Hamilton**
			1/9: Describing Data	Ch 1 Ch 2	Ch. 1 Ch. 3: Graphs
1/14: Describing Data	Ch. 2 Ch. 3	Ch. 5: Summary Statistics	1/16: Describing Data	Ch 3	Ch. 2 Data Mgmt*
1/21: Probability	Ch. 4	Ch. 2 Data Mgmt*	1/23: Probability	Ch. 4	Ch. 2 Data Mgmt*
1/28: Probability	Ch. 4	Ch. 2 Data Mgmt*	1/30: Discrete Prob. Distributions	Ch. 5	Ch. 2 Data Mgmt*
2/4: Discrete Prob. Distributions	Ch. 5	Ch. 2 Data Mgmt*	2/6: Continuous Distributions	Ch. 6	Ch. 2 Data Mgmt*
2/11: Sampling Distributions	Ch. 7	Ch. 2 Data Mgmt*	2/13: Sampling Distributions	Ch 7	Ch. 2 Data Mgmt*
2/18: Sampling Distributions	Ch. 7		2/20: Estimating Means & Proportions	Ch 8	
2/25: Estimating Means & Proportions	Ch. 8		<b>2/27: Midterm 1</b>		
3/4: Testing Hypotheses	Ch. 9		3/6: Testing Hypotheses	Ch. 9	
<b>3/11: Spring Break</b>			<b>3/13: Spring Break</b>		
3/18: Testing Hypotheses	Ch. 9		3/20: Testing Hypotheses	Ch. 9, 10	
3/25: Testing Hypotheses	Ch. 10, 11		3/27: Linear Regression	Ch. 14	Ch. 7
4/1: Linear Regression	Ch. 14	Ch. 7	4/3: Linear Regression	Ch. 14	Ch. 7
4/8: Multiple Regression	Ch. 15	Ch. 7,8	<b>4/10: Midterm 2</b>		
4/15: Multiple Regression	Ch. 15	Ch. 7,8	4/17: Multiple Regression	Ch. 15	Ch. 7,8
4/22: Multiple Regression	Ch. 15	Ch. 7,8	4/24: Multiple Regression	Ch. 15	Ch. 7,8

\* When working on Hamilton's Chapter 2, Data Management, you may find the following online tutorial helpful:  
<http://www.cpc.unc.edu/services/computer/presentations/statatutorial/>

Another very useful web site for Stata can be found at:

<http://www.ats.ucla.edu/stat/stata/default.htm>

\*\* Other readings from Hamilton will be assigned in conjunction with computer exercises.

☞ **Final Exam: Tuesday April 29th @ 12 noon**

## Homework submission requirements.

You will be submitting two types of homework for grades in Economics 400:

(1) **Book problems** that will be assigned and which you will complete online using MyStatLab. These problems will be assigned to you on (roughly) a weekly basis. You will have approximately one week to complete the exercises for full credit. You will supply the answers through MyStatLab and they will be graded and recorded in your file. You are to do the book problems alone and not collaborate with other students. You can request assistance from Professor Turchi or the Teaching Assistants, but *the Honor Code will apply to all homework.*

(2) **Computer Exercises** will be assigned and turned in *on paper, at the beginning of class on the date due.*

- ✓ The exercise should be submitted at the beginning of lecture on the day that it is due. You have until **noon the following day** to turn in the exercise *with penalty* (see below). If you miss the grace deadline, do not bother to turn in the exercise; it will not be accepted. If the exercise is not turned in during lecture, you **must** turn it into the *receptionist in Room 107 Gardner Hall and ask her to put your exercise in the Econ 400 Homework Box.* Exercises delivered any other place (e.g., slipped under a TA's or Professor Turchi's door) will not be accepted.
- ✓ The exercise should be **stapled** before submission (there are public heavy duty staplers on the first floor of the Davis library and there is a stapler in the reception room of the Economics Department, GA 107).
- ✓ Finally, be sure to sign the Honor Pledge on the front page of your exercise before turning it in.

## Homework Grading Policy

If the student turns a computer assignment in late (but before noon the next day), he/she is going to get 50% *at most* even though he/she might do the exercise completely correctly.

For homework completed in MyStatLab, I may allow late submissions online, but only for a few days after the due date and with a grade penalty. More on this later.

When your final homework average is computed, your lowest homework grade (including a zero for assignments not turned in or turned in past the grace time) will be dropped.