

SYLLABUS

CONTACTING THE PROFESSOR

Office Hours: During X-hour
Wed 5-6pm
or by appointment.

Office: 304 Silsby
Phone: 603-646-2943

In order to efficiently accommodate students with similar questions, when possible I will hold office hours in a classroom (not 304 Silsby). X-hours will be in our regular classroom.

COURSE DESCRIPTION

This is an introductory course and assumes no prior knowledge of statistics. The goal of the course is to develop an understanding of how to work with data and how to use data to describe economic phenomena and evaluate hypotheses about how the world works. Another goal is to develop the skills for you to better understand and critically evaluate social science research reported on in the popular press.

This is not a highly technical course – more detail is covered in Economics 20 – but covers some of the basic theory of statistics in addition to practical aspects of working with data.

TEXTBOOKS

Required Textbook: *Statistics and Econometrics: Methods and Applications*, by Orly Ashenfelter, David Levine, and David Zimmerman (John H. Wiley & Sons, Inc.).

This textbook follows closely with the lecture materials. However, in some cases lectures will go outside material in the textbook. The textbook contains many examples and problems which may be helpful to you in learning the material.

Recommended: *A Gentle Guide to the Introduction of STATA*, by Alan C. Acock.

This covers the basics of the statistical software we will be using in this course.

Selected pages: *Introduction to the Practice of Statistics*, Fifth Edition by David Moore and George McCabe (New York: W.H. Freeman and Company).

This textbook has better coverage of basic sample statistics, and will be used primarily in the first few lectures. Copies of this textbook are available on course reserve in Baker Library.

COURSE REQUIREMENTS

The final grades will be based on the following weighted combination:

Class Participation – 5%
Problem Sets (4) – 10%
Quizzes (4) – 20%
Midterm Exam – 25%
Final Exam – 40%

The best way to learn statistics is through practice. To encourage practice, the class after each problem set is handed in there will be a quiz; combined, quizzes account for nearly as much of the grade as the midterm. Each quiz will cover same the materials as the problem set just handed in. You can also think of the quizzes as a warm-up for the exams, which will have similar styles of questions in a longer format.

You are free to work together on problem sets, but remember that this is your chance to practice the material! You will be on your own on the quizzes and exams. I will also try to avoid answering direct questions (other than clarifying questions) about the problem sets, though I will be happy to work through related problems during office hours. In the past, students who relied heavily on me or on others to get the answers to the problem sets have tended to do poorly in the class.

WHERE TO GO FOR MORE PRACTICE

For additional practice, I will occasionally hand out additional practice problems. The textbook also has practice questions. Finally, you can try clicking on “Online Quizzes” on the website <http://bcs.whfreeman.com/ips5e/>.

FINAL GRADE DISTRIBUTION

The final grade will be based on the department curve of roughly 1/3 “As” (A, A-) 1/3 “Bs” (B+, B, B-), and 1/3 “Cs.” (C+, C, C-). Grades below C- may or may not be given; a grade below C- indicates the professor’s serious concern about a student’s readiness for Economics 20. In one previous quarter, roughly 5 percent of students received a grade below C-. After the midterm, you will receive an assessment of your grade so far in the class.

ASSISTANCE WITH STATISTICAL SOFTWARE

We will work with data in this class using the statistical software STATA. This software is free to students and can be downloaded from the site <http://www.dartmouth.edu/comp/resources/downloads/win/academic/stata.html>. This software will be introduced in a special STATA tutorial class

When: Thursday, October 4 (X-hour time: 9-9:50 or 12-12:50)

Where: 61 Carson (Berry Instructional Center)

In addition, two resources are available to students with questions about STATA. An introductory manual for STATA, *A Gentle Guide to the Introduction of STATA* is recommended and is also on reserve. In addition, there is a STATA consultant available for students in the Social Science Computing center in the basement of Silsby during these hours:

Sunday	5:00-7:30PM
Monday	7:00-10:00PM
Tuesday	2:00-5:00PM and 7:00-10:00PM
Wednesday	7:00-10:00PM
Thursday	2:00-5:00PM and 7:00-10:00PM

People in the lab can also help if you have trouble installing STATA.

BLACKBOARD

Course materials, including problem sets, problem set solutions, and datasets will be posted on-line. I may also get around to putting some lecture materials on-line, but likely only several days after the lecture.

ACCOMMODATIONS

Students with any disabilities or particular needs should see me as soon as possible to discuss appropriate accommodations. Do not wait until just before (or after) the exam.

COURSE OUTLINE

See attached.

Textbooks

alz = Ashenfelter, Levine, Zimmerman "Statistics and Econometrics" (main textbook)

mm = Moore and McCabe "Introduction to the Practice of Statistics" (selected pages - on reserve)

Course Outline

#	Day	Date	Overall Theme	Text Sections	Problem Sets/ Quizzes/ Tests
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Part 1: Data and Sample Statistics

How data are collected and organized; sample statistics (means, quantiles; variance and other measures of spread); normal distribution; scatterplots, correlations, least squares fit; interpreting regression coefficients; causation versus correlation; introduction to STATA.

1	Wed	26-Sep	Introduction: Use of Statistics in Economics	alz 1.1-1.3, 1.5	
2	Fri	28-Sep	Univariate Sample Statistics	mm 1.1-1.3	PS 1 out-due 8 Oct
3	Mon	1-Oct	Measures of Association	mm 2.1-2.3	
4	Wed	3-Oct	Measures of Association II: Cautions	mm 2.4-3.1	
5	Thr	4-Oct	<u>X-Hour</u> : Using STATA <u>Note</u> : special location - 61 Carson	(handout)	
6	Fri	5-Oct	Sampling and surveys	alz 1.3-1.4, mm 3.1-3.4	

Part 2: Probability and Random Variables

Probability definition and rules; independence; definition of a random variable; discrete distributions: binomial distribution, uniform distribution; continuous distributions: normal, t-; expected values; variance; covariance; transformations; estimators as random variables

7	Mon	8-Oct	Set Theory & Probability	alz 2.1-2.5, 2.7	PS 1 - Due Quiz (Sample Stats) PS 2 out-due 22 Oct
8	Wed	10-Oct	Random Variables & Distributions	alz 3.1-3.7	
9	Fri	12-Oct	Mathematics of Expectations	alz 4.1-4.4	
10	Mon	15-Oct	Multivariate Distribution & Expectations	alz 5.1-5.8	
11	Wed	17-Oct	Properties of the Sample Mean	alz 6.1-6.6	
12	Fri	19-Oct	Central Limit Theorem	alz 6.1-6.6	
13	Mon	22-Oct	Estimation & Estimators	alz 7.1-7.5	PS 2 - Due

Part 3: Basics of Statistical Inference

Confidence intervals; hypothesis tests: z-tests and t-tests; type I and type II errors; power calculations; testing for difference in means; other hypothesis tests

14	Wed	24-Oct	Confidence Intervals	alz 8.1-8.2	Quiz (Prob & RVs)
15	Fri	26-Oct	Hypothesis Testing	alz 8.3	
16	Mon	29-Oct	MIDTERM REVIEW		
17	Wed	31-Oct	MIDTERM		MIDTERM
18	Fri	2-Nov	More inference; Power	alz 8.3	PS 3 out-due 12 Nov
19	Mon	5-Nov	Comparing two Means	mm 7.2 , handout	
20	Wed	7-Nov	Chi-squared test of independence	handout	

(continued)

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Part 4: Regression

Assumptions of the regression model; single and multiple-hypothesis tests of the regression model; interpreting regression coefficients: multiple regression coefficients, dummy variable coefficients, log regression coefficients; goodness of fit; Gauss-Markov Theorem

	Fri	9-Nov	NO CLASS		
22	Mon	12-Nov	Linear Regression Model	alz 9.1-9.5	PS 3-Due PS 4 out-due 28 Nov
	Wed	14-Nov	NO CLASS		
23	Thr	15-Nov	X-hour Inference in Regressions	alz 10.1-10.5	Quiz (Inference)
24	Fri	16-Nov	Gauss-Markov Thm; Prediction; Goodness of Fit	alz 10.6-10.7	
25	Mon	19-Nov	Multiple regression model I	alz 11.1-11.3	
	Wed	21-Nov	<i>Thanksgiving Break</i>		
	Fri	23-Nov	<i>Thanksgiving Break</i>		
26	Mon	26-Nov	Dummy Explanatory Variables	alz 12.2	
27	Wed	28-Nov	Hypothesis testing	alz 12.3	PS 4-Due
28	Fri	30-Nov	Omitted Variables Bias Instrumental Variables	alz 13.1-13.5	Quiz (Regression)

Part 5: Review and Final

29	Mon	3-Dec	Review		
		TBA	Additional Review		
		TBA	FINAL EXAM		FINAL