

Economics 241C: Introductory Economic and Business Statistics

Syllabus

Professor Mark Hopkins

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Office Hours: Tuesday & Thursday 1-2pm & 4-5 pm

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“There are three kinds of lies: Lies, Damn Lies, and Statistics.”
–attributed to Disraeli

“I do not fear statistics, I fear the lack of statistics.”
– anonymous

For better or worse, statistics figure into nearly every aspect of modern life, so statistical literacy is one of the most important skills you can possess. This course provides an introduction to probability theory and statistical methods, with an emphasis on solving statistical problems that arise in economics, business, and the social sciences.

Course Times:

Lectures	2:35 – 3:50	TTh	101 McCreary
Computer Lab	10:00 – 11:00	Tues	204 Glatfelter

Course Description:

The main reference material for this course is the following text:

- Berenson, Levine and Krehbiel (BLK). Basic Business Statistics (9th edition, Prentice Hall).

The course will be evaluated on the following basis:

Lab Work / Homework (10% each)	20%
Participation, In-Class Quizzes	10%
Course Project	20%
2 Mid-term Exams	30% (15% each)
Comprehensive Final	20%
On-line quizzes	(extra: max 10%)

Expectations:

In my experience, **statistics cannot be taught**; it can only be learned. My job is to facilitate your learning, and the best way I can do this is by assigning plenty of practice problems. Statistics can be a challenging subject, but it builds on itself – the more you understand the basic ideas, the easier new concepts become. **It is important that you try not to fall behind in the material.** The course entails two weekly lectures, during which I will introduce new material and concepts, and one lab, when you will have an opportunity to implement these techniques on a computer. I may also give short quizzes occasionally as a diagnostic tool, to bring any trouble you may have with the concepts to our mutual attention. Final evaluation will be based on performance in three exams (50% total grade), a course project (20%), and your efforts throughout the semester (30%). I will also make available (from Sunday–Tuesday) a weekly on-line quiz on the reading for that week, which you may do as extra credit.

“Get out of jail free”: All due dates are final, with one exception. Statistically speaking, something is bound to occur to at least one of you that will prevent you from attending a class or lab or

completing an assignment on time (this does *not* apply to exams). Therefore, everyone has one “get out of jail free” card that they can use as they wish to excuse an absence during a missed quiz or to let them turn in one homework by the end of the semester. There is only one, however, so use it wisely! Students who let me know of conflicts *in the first two weeks* of the course (e.g. for athletic and other events away from campus) do not need to use the card.

Course Project:

Although solving lots of problems is the best way to learn statistical techniques, it is neither the most fun nor the most useful way to understand why a statistics course is so important & useful to have. Therefore, you will be responsible for completing a course project. This will require you to think about a problem that interests you, find relevant data, perform statistical analyses with that data, and to summarize your findings in a **short paper** (less than 5 pages, excluding tables and graphs). You will be responsible for submitting information regarding your project throughout the semester, but evaluation will be based only on the final product due at the end of the semester. Past topics have ranged from topics such as how Kerry Collins’ passing performance affects the Giants probability of winning games, to what the best strategy is for winning on the Price is Right. The idea is to have fun!

Lab work:

Statistics professors get to sit in their chairs and think deeply about probability theory. For the other 99.9% of the world, statistics is a hands-on affair. The lab period is designed to help you get comfortable with doing this kind of “hands-on” statistical analysis, and give you a basic familiarity with programs for doing statistical work such as Excel and SPSS. The lab assignments are intended to be completed during the lab period, although you may turn them in by Friday 4pm to my mailbox if necessary.

Homeworks:

Homeworks will be assigned weekly to help you learn the material and prepare for the written exam questions. Homeworks covering the weeks material will be due at the *start* of the first class of the following week.

Grading:

Unlike a literature class, grades in a statistics class tend to be pretty objective: you get the answer right or you don’t. However, there are two ways to translate numerical scores to letter grades: on an objective scale, and on a “curve.” I found that the most frequent question asked by students who do poorly on an exam is whether I will “curve” that exam. The irony, of course, is that they do not seem to know what a “curve” is. That is, students who do relatively poorly on an exam think grading on a curve will help them when generally speaking it will not: curves tend to benefit those who do best on exams, and hurt those who do poorly! Therefore, I believe the fairest way to grade is on an absolute standard. Typically, over my 3 semesters at Gettysburg, that standard has been

80+ percent	A	65-70%	B	53-57%	C
75-80%	A-	60-65%	B-	50-53%	C-
70-75%	B+	57-60%	C+	40-50%	D

Honor Code:

In general, I support any means and methods that enhance your ability to learn statistics. This includes studying and working on homework problems in groups or working together on labs, which I strongly encourage. This does NOT, of course, also apply to methods of evaluation such as quizzes or exams, which are to be done by you alone. If you have ANY questions about these expectations please let me know. I do not want to participate in a trip to the Honor Commission any more than you do!

Course Outline:

Econ 241 lectures (Spring 2004)

Number	Week	Date	read Chapter	Title
FROM DATA TO STATISTICS				
1	1	22-Jan	1	Intro to Course
2	2	27-Jan	1.1-1.5	Statistics? Huh! What is it good for?
3	2	29-Jan	1.6-1.8	Data: what is it & how do you get it?
5	3	3-Feb	2.1-2.2	The empirical (frequency) distribution
6	3	5-Feb	2.3-2.5	How to present data, win friends, and influence people
7	4	10-Feb	3.1-3.5	Descriptive statistics (central tendencies in univariate data)
8	4	12-Feb	3.6	Descriptive statistics (higher moments & bivariate data)
PROBABILITY THEORY				
9	5	17-Feb	4.1-4.3	What is probability?
10	5	19-Feb	4.4-4.5	Learning how to count (again)
11	6	24-Feb	5.1-5.3	Probability for things you can count (discrete distributions)
12	6	26-Feb	5.4-5.5	The hypergeometric & poisson distributions
13	7	2-Mar	6.1-6.2,6.5	The "bell curve" (the normal distribution)
14	7	4-Mar	6.3-6.4	Other continuous distributions & Review
15	8	9-Mar		FIRST MIDTERM
16	8	11-Mar	7.1	Sampling distributions
spring break				
DATA + PROBABILITY THEORY = INFERENCE				
17	9	16-Mar	7.2-7.3	Sampling distributions & the Central Limit Theorem
18	9	18-Mar	<i>handout</i>	Sampling, the Empirical CDF and "Bootstrapping"
19	10	23-Mar	8.1-8.3	Confidence and Uncertainty
20	10	25-Mar	9.1-9.3	How to Statistically Evaluate a Hypothesis
21	11	30-Mar	9.4-9.7	Types of Hypothesis Tests
22	11	1-Apr	10.1-10.3, 12.1	Testing Hypotheses across multiple samples
23	12	6-Apr	11.1	Analysis of Variance & Review
24	12	8-Apr		Easter
25	13	13-Apr		SECOND MIDTERM
26	13	15-Apr	13.1-13.2	Regression & the "Economic Model"
27	14	20-Apr	13.2-13.4,13.10	Linear Regression & Ordinary Least-Squares (OLS)
28	14	22-Apr	13.5-13.9	Hypothesis Testing & Inference in a Regression
29	15	27-Apr	14.1-14.4	Ceteris paribus: Estimating a multiple regression
30	15	29-Apr	14.5-14.6, 15.1-15.2	Specification & Model Building
31	16	4-May	14.7, 16.1-16.4,16.6	Logistic Regression & Time Series Models
32	16	6-May	17	Decision theory

Projects due THURSDAY, MAY 6

Final Exam is 8:30 a.m., FRIDAY, MAY 14