

BOSTON COLLEGE
Department of Economics

Ec 157.01
Statistics-Honors
Fall, 1997

Harold Petersen
McGuinn 518, (617) 552-4550
Office Hours: M 2-3, W 1-2, Th 3:15-4

Syllabus

Text: Anderson, Sweeney, and Williams, Essentials of Statistics for Business and Economics, West Publishing Co., 1997. (This one is in the bookstore.) Also, selected readings from Gary Smith, Statistical Reasoning, 3rd ed., 1991. (This one is on reserve in O'Neill)

Course Requirements: 2 midterm exams (30% each), on **Oct. 2** and **Nov. 6**
a final exam (40%), on **Dec. 16 at 9:00 a.m.**
numerous problem sets (used as additional evidence for up to one notch on your final grade: B+ to A-, B to B+, etc.)

Course Organization and Expectations:

Ec. 157 is an intensive course in probability and statistics. It assumes some knowledge of set operations, algebra, and calculus, and most importantly, intellectual curiosity and a willingness to work. I expect you to come to every class, to read the text carefully, to work through the problem sets, and to raise questions in class. You are encouraged to work together on the problem sets, if you like, but you should all be sure to understand how they are done.

Your work on exams is to be entirely your own. Be sure you are familiar with the sections on "Academic Integrity" in the Undergraduate Catalog (p. 33) and be aware that I take this most seriously.

There will be no make-up exams. If you miss an exam for good reason, let me know immediately (my phone has voice mail) and you will be graded on the other exam and the final. If you do poorly on one mid-term but consistently well on the other one and the final, the one poor exam will be discounted (but not completely ignored).

Finally, a word on statistics. It should be fun, no matter what you have heard about it. It should give you a sense of power and hopefully of responsibility too as you gain that power. It will be new to most of you, and some of you will find it difficult. But you have a good text (read it and then if necessary go to Smith (on reserve) for another presentation) and you will have problem sets designed to help you master the more difficult material. If you take the course seriously and you work at it, most particularly early on, you will do well and you will enjoy it.

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<u>Date</u>	<u>Topics</u>	<u>Assignment</u>
Sept. 2	Introduction Data, Description, & Inference Frequency Distributions & Histograms	Text, Chs. 1 and 2
Sept. 4	Central Tendency: Mean, Median, Mode Dispersion (or spread): Range, Variance, Standard Deviation	Text, Ch. 3 (3.1-3.3)
Sept. 9	Probability The Sample Space Probability: Basic Axioms Classical, Relative Frequency, and Subjective Interpretations	Text, Ch. 4 (4.1-4.2) Smith (2.2- 2.5)
Sept. 11	Simple Events and Compound Events The Addition Rule Conditional Probability and Independence The Multiplication Rule	Text, Ch. 4 (4.3-4.4)
Sept. 16	The Subtraction Rule Bayes Theorem	Smith (3.5, pp.113-115) Text, Ch. 4 (4.5) Smith (3.6)
Sept. 18	Random Variables Probability Distributions Expected Values and Moments Mean, Variance, Standard Deviation, Skewness	Text, Ch. 5 (5.1-5.3) Smith (4.2, pp.150-152)
Sept. 23	Discrete Distributions The Binomial Distribution The Poisson Distribution	Text, Ch. 5 (5.4-5.5)
Sept. 25	Functions of Random Variables Linear Transformations Expected Values and Decision-Making	Smith (4.8) Smith (4.6-4.7)
Sept. 30	Summary and Review	
Oct. 2	First Midterm Examination	
Oct. 7	Continuous Distributions The Uniform Distribution The Normal Distribution	Text, Ch. 6 (6.1-6.2)
Oct. 9	Using the Normal Distribution Standardized Distributions Approximating Binomial Probabilities	Text, Ch. 6 (6.3)

Oct. 14	Sampling Samples and Populations Random Sampling Sampling Distributions The Central Limit Theorem	Text, Ch. 7 (7.1-7.5) Text, Ch. 3 (3.7)
Oct. 16	Estimation of Parameters Properties of Estimators Confidence Interval Estimates	Text, Ch. 7 (7.6) Text, Ch. 8 (8.1)
Oct. 21	Small Sample Estimates The "t" Distribution	Text, Ch. 8 (8.2)
Oct. 23	Confidence Intervals for the Proportion	Text, Ch. 8 (8.4)
Oct. 28	Tests of Hypotheses The Null Hypothesis Type I, Type II Errors The Prob Value	Text, Ch. 9 (9.1-9.4)
Oct. 30	Tests of Hypotheses (cont'd) Small Sample Tests	Text, Ch. 9 (9.5-9.6)
Nov. 4	Summary and Review	
Nov. 6	Second Midterm Examination	
Nov. 11	Regression Fitting a Line to the Data Ordinary Least Squares	Text, Ch. 12 (12.1-12.3)
Nov. 13	The Regression Model Estimating the Parameters	Text, Ch. 12 (12.4)
Nov. 18	Standard Errors The "t" statistics R-Squared and Adjusted R-Squared	Text, Ch. 12 (12.5)
Nov. 20	Predicting Y at a given level of X Prediction Intervals	Text, Ch. 12 (12.6)
Nov. 25	Multiple Regression The General Linear Model Dummy Variables Confidence Intervals t Statistics	Text, Ch. 12 (12.9)
Dec. 2	Regression and Forecasting Some Regression Pitfalls	Text, Ch. 12 (12.8)
Dec. 4	Regression and Correlation	Text, Ch. 3 (3.5)
Dec. 9	Summary and Review	
Dec. 16	Final Exam at 9:00 a.m.	