BOSTON COLLEGE
Department of Economics

Statistics Soner Tunay
EC 151.01-03 Carney 33B, x2-8704
Spring 1997

This is an introductory course in statistics. Contrary to some belief, Statistics is neither simple-minded formula crunching nor pure mathematical manipulation. Instead, statistics is the science of collecting, summarizing and interpreting the data. In this course you will learn to apply statistics to the real life problems. Statistical concepts will be taught with applications in mind. The course has three major sections: Descriptive statistics, probability and distributions and statistical inference.

Office Hours: Mon. 10-11, Wed 10-11

Text: Paul Newbold: Statistics for Business and Economics, forth ed., Prentice Hall, 1995. (required)

Course requirements: Quizzes(20%), mid-term exams(25% each), final exam(30%).

Course organization and expectations: The class meets three times a week (Mon., Wed., Fri. 9-10 or 11-12). There will be problem sets after each major subject. I will not grade them, but they will be determinant in the final evaluation. I will not accept the ones that are not returned on time. I encourage small group study on problem sets as long as everyone contributes to the problem solving equally. I believe, teamwork improves your abilities to share ideas and learn from others. Naturally, you will be evaluated from your own work on the exams.

Every new topic requires the previous ones to be understood and digested as well. In order to motive this, there will be **random** quizzes. So, you are expected to be ready to take a short quiz in any time. In contrast to the random timing of quizzes, they will be mostly out of your homework assignments. There will not be any make-ups for the missed quizzes. I will drop the lowest quiz grade in the end.

The first mid-term exam will be on Feb. 26th, Wed. The second one is on April 9th, Wed. They both will be in the evening after 6 PM. The final exams for the first and third section are on Tue., May 6th 9 AM and Mon., May 5th 9 AM respectively.

The structure of the course will follow the textbook closely. I strongly encourage you to read the textbook for a detailed discussion of the material covered in the class. I also believe that a quick read of the topics before each class helps you to learn the subject material faster.

Syllabus

Introduction to Statistics (Ch. 1)
Descriptive Statistics (Ch. 2)
- i) Measures of central tendency
- ii) Measures of dispersion
- iii) Graphical descriptions: Histograms

Probability (Ch. 3)
- i) Random Events
- ii) Permutations and Combinations
- iii) Bivariate Probabilities
- iv) Bayes' Theorem

Discrete Random Variables and Probability Distributions (Ch. 4)
- i) Probability Distributions for Discrete Random Variables
- ii) Expectations for Discrete Random Variables
- iii) Binomial Distribution

Continuous Random Variables and Probability Distributions (Ch. 5)
- i) Probability Distributions for Continuous Random Variables
- ii) Expectations for Continuous Random Variables
- iii) The Normal Distribution
- iv) The Central Limit Theorem

Sampling Distribution (Ch. 6)
- i) Sampling Distribution of the Sample Mean
- ii) Sampling Distribution of the Sample Variance

Point Estimation (Ch. 7)
- i) Properties of Estimators: Unbiasness, Efficiency and Consistency

Interval Estimation (Ch. 8)
- i) Confidence Intervals
- ii) Student's t distribution
- iii) Interval estimation

Hypothesis Testing (Ch. 9)
- i) Concepts of Hypothesis Testing
- ii) Tests of the Mean
- iii) Tests of the Variance
- iv) Tests for the Difference Between Two Means