

STEVENS INSTITUTE OF TECHNOLOGY
HOWE SCHOOL OF TECHNOLOGY MANAGEMENT
MGT620WS Statistical Models
EM796WS Statistical Models

This course covers an introduction to the probabilistic and statistical concepts and models used in day-to-day business decision-making. There are three general areas of focus: *descriptive statistics*, *probability*, and *statistical inference*. *Descriptive statistics* includes methods of organizing, summarizing, and presenting data (qualitative as well as quantitative). Although in earlier in-class versions of this course *descriptive statistics* was not covered at all, I have concluded that many students found the time and effort spent here worthwhile. Therefore, we will spend the first few weeks of the course learning how to develop data using tabular, graphical, and numerical methods of descriptive statistics.

Probability problems arise when we draw a sample from a population and wish to make statements about the likelihood, or probability, of the sample's having certain characteristics. I realize that this sounds abstract but it actually describes commonly encountered problems such as this: "if a consumer products company knows that 35 percent of its customers are women and 65 percent are men, what is the probability that in a sample of ten customers, 50 percent will be men and 50 percent will be women?" Note that in the problem statement we already know the characteristics of the population (65% men and 35% women). What we are interested in is what a sample drawn from this population might look like. We will spend three weeks on basic probability theory, discrete and continuous probability distributions, and random variables.

Problems concerning *statistical inference* arise when we draw a sample from a population and wish to make statements about the population's having certain characteristics. Note that this is directly opposite to the situation characterizing probability. In the case of statistical inference, we know nothing about the characteristics of the population. All we can do is draw samples from that population and then *infer statistically* the characteristics of interest about the population...from the information contained in the sample.

Finally, a statistical package (SPSS) will be employed for the computational aspects of the subject. The student version of SPSS v14.0 is shrink-wrapped with the text as it is sold in the Stevens Campus Bookstore. Unfortunately, you **MUST** purchase the textbook there; if the text is purchased elsewhere it will not have the SPSS CD. Let me also add that using SPSS (rather than something like Excel) is a **course requirement**.

Instructor Information

Robert Stinerock

The best way to reach me is by simply using the *Discussions* or *Mail* capabilities of WebCT. A possible, but less reliable, way to reach me: rstinero@stevens.edu.

Another possible, but least reliable of all, way to reach me: (201) 216-8110 (campus no.)

Just in case: (201) 216-5385 (FAX number in Howe School Dean's Office)

Required textbook

David R. Anderson, Dennis J. Sweeney, and Thomas A. Williams
Statistics for Business and Economics, 10th Edition, 2008, ISBN 0-324-57133x
 Cincinnati: Thomson Learning, South-Western College Publishing (***please note that the ISBN listed here is for the version of the text which is bundled with SPSS software; it will be available only in the Stevens Bookstore.***) You must purchase *this edition* of *this textbook* bundled with *this software*. Anything else will cause you real headaches!

Evaluation

40% ---Midterm Examination (distributed to you by October 1, due by November 1)
 40% ---End-of-term Examination (both exams and 2 cases are due by December 15)
 20% ---2 of 4 cases, pp. 685-689 (answer questions, analysis must be done using SPSS)

Course Outline

Week No.	Topics
1	Introduction; Summarizing Qualitative Data
2	Summarizing Quantitative Data; Tabular & Graphical Methods
3	Summarizing Quantitative Data; Numerical Methods
4	Probability Theory
5	Discrete Probability Distributions
6	Continuous Probability Distributions
7	Sampling and Sampling Distributions
8	Interval Estimation
9	Hypothesis Testing
10	Hypothesis Testing (continued)
11	Simple Linear Regression
12	Multiple Regression
13	Tests of Independence; Statistical Inference About Two Means

Just a few other points:

1. I have “suggested” the even-numbered problems from each chapter in the textbook (the solutions are in Appendix D, pp. 948). You should not submit this work to me as they are not used as part of your grade for the course. (Your scores on the two examinations and the two cases will comprise your final course grade.) I recommend working through as many problems as you feel you need to be comfortable, and competent, with the material. Only you can decide how many (or few) problems you will want to do.
2. The course will be conducted “asynchronously” in that we will not have predetermined times and days during which we all log on. The most practical way of handling our discussion is simply via the postings. I will make every attempt to check these almost every day; naturally, I will always respond as quickly as I can.
3. We will not be using Excel or Minitab for the computational aspects of the course, preferring instead the more powerful and user-friendly SPSS.

4. I will offer all students a 'free grading' on both examinations. The exams will be 'take home' in the sense that I will upload both to the website, and you will work through them at your own pace. More specifically, since each will be a Word document, you should simply download it, save to your hard-drive, and then complete the questions as you can. (I don't need to see your work, so please simply enter your answers in the blanks provided.) Once you are comfortable with your answers, you should add your name, save the document, and mail it to me. I will then 'grade' it, and let you know what, if any, questions you should re-visit. Once you have made your revisions, mail it to me in the same way. Your final grade on each exam will be the percentage grade you get after your 'free grading.' What do you need to do to qualify for this generous offer? You need to submit your first exam no later than November 1; the second exam should be mailed to me by December 10. Later submissions will result in my rescinding the offer of the 'free grading,' and you will be stuck with the usual one-time-submission result. Apart from these (generous) deadlines, there is no pressure at all.