

Stevens Institute of Technology
Howe School of Technology Management
Syllabus

BT221

Statistical Models

Semester: Fall 2013

Instructor Name & Contact Information:

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Overview

This course provides students with a rigorous introduction to the probabilistic and statistical concepts used in day-to-day business decision-making. Topics include numerical methods of descriptive statistics, elements of basic probability theory, discrete probability distributions, continuous probability distributions, sampling and sampling distributions, point estimation, the central limit theorem, interval estimation, sample size determination, hypothesis testing, inferences about the difference between population means, tests of independence of two categorical variables, simple linear regression, multiple regression, dummy variable regression, and the general linear model.

Prerequisites: none

Relationship of Course to Rest of Curriculum

Statistical Models is a core course for all concentrations in the MSM curriculum; it is also a core course in the MBA program for all majors. It is a pre-requisite for MGT623 Financial Management

Learning Goals

After successfully completing this course, students will be able to

- Think logically and analytically about quantitatively-based problems in a variety of functional areas such as finance, marketing, marketing research, product design, quality control, and economic forecasting
- Appreciate both the strengths and limitations of many commonly-used statistical methodologies
- Reason programmatically in the context of the object-based 'R' computer language, both with respect to statistical analysis and to programming
- Use with confidence and skill a number of powerful, widely-used, and generally-applicable statistical and probabilistic methodologies
- Think critically and skeptically about statistical 'findings' often encountered not only in the workplace but also in the media; that is, to understand how people "lie with statistics"

Pedagogy

The course will involve class discussion/lecture and extensive in-class problem solving exercises. Accordingly, students should bring the laptop to each class (with the R statistical software package loaded on the hard drive). If student has no laptop, he/she should bring a handheld calculator instead. The class meetings will be interactive and will involve working through many of the statistical concepts during class. The two exams will be in class; the project will be due at very end of term.

Required Text(s)

Textbook:

Statistics for Business and Economics, by Newbold, Carlson Thorne, 8th Ed. Pearson 2013.

Required Statistical Software: Microsoft Excel and Mystatlab

Grading

There will be a problem solving midterm and final exam. To prepare for these, students will be assigned problems each week whose solution will be discussed in class. Students will be assigned homework each week in Mystatlab, an online resource.

Assignment	Grade Percent
Exam (Mid-term) (probability, distribution, sampling)	40%
Exam two (Final) (inferential statistics)	45%
Assignments Mystatlab	15%
Total	100%

Course Schedule

Week	Topic	Reading
1.	Describing Numerical data	Chapter 2
2.	Probability	Chapter 3
3.	Bayes Theorem	Chapter 3(continued)
4.	Discrete Random Variables	Chapter 4
5.	Continuous Random Variables	Chapter 5
6.	Sampling and Sampling Distributions	Chapter 6
7.	Estimation	Chapter 7, 8
8.	Hypothesis Testing	Chapter 9
9.	Hypothesis Testing	Chapter 10
10.	Simple Regression	Chapter 11
11.	Multiple Regression	Chapter 12
12.	Analysis of Variance	Chapter 15
13.	Applied Regression	lab
14.	Final Exam	

Ethical Conduct

The following statement is printed in the Stevens Graduate Catalog and applies to all students taking Stevens courses, on and off campus.

“Cheating during in-class tests or take-home examinations or homework is, of course, illegal and immoral. A Graduate Academic Evaluation Board exists to investigate academic improprieties, conduct hearings, and determine any necessary actions. The term ‘academic impropriety’ is meant to include, but is not limited to, cheating on homework, during in-class or take home examinations and plagiarism.”

Consequences of academic impropriety are severe, ranging from receiving an “F” in a course, to a warning from the Dean of the Graduate School, which becomes a part of the permanent student record, to expulsion.

Reference: The Graduate Student Handbook, Academic Year 2003-2004 Stevens Institute of Technology, page 10.

Consistent with the above statements, all homework exercises, tests and exams that are designated as individual assignments MUST contain the following signed statement before they can be accepted for grading.

I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination. I further pledge that I have not copied any material from a book, article, the Internet or any other source except where I have expressly cited the source.

Signature _____

Date: _____

Please note that assignments in this class may be submitted to www.turnitin.com, a web-based anti-plagiarism system, for an evaluation of their originality.