



DEPARTMENT OF STATISTICS

STAT 621

Fall 2011

Regression Analysis for Business
Syllabus

Instructors:

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Source material

Required

- Class Notes. A complete, half-size copy of these notes can be purchased through Study.net beginning Thursday, September 1. Alternatively, these can also be downloaded directly from the Statistics 603 Webcafe e-room.
- SAS Institute, JMP 9, downloadable from upenn.onthehub.com.
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Recommended

- Stine and Foster, *Statistics for Business*, Addison Wesley.¹

Optional (on reserve at Lippincott Library)

- Sall, Creighton, Lehman, *JMP Start Statistics*, 4th Edition, SAS Publishing.
- Freedman, Pisani and Purves, *Statistics*, 4th edition, Norton.
- Keller, *Statistics for Management and Economics*, 8th edition, South-Western Cengage Learning.

The fundamental material for the class is contained in the Class Notes which will be discussed and elaborated in the class lectures. A good deal (but not all) of the Class Notes is also elaborated in the Stine and Foster (SF) textbook. Indications for the relevant readings in SF are included throughout the Class Notes. For those who would

¹ The course ID for students who purchase the e-book option is stine00422. The e-book option provides interactive exercises and quizzes for students who would like further practice doing problems related to the modules in these course notes.

like further background materials, we recommend Sall, Creighton and Lehman (SHL), Freedman, Pisani and Purves (FPP) and Keller (K). SHL is a basically an example rich guide to statistical analysis with JMP. FPP is a highly verbal and conceptual book - an excellent introduction both for “poets” who are unfamiliar with technical readings and for “quant jocks” who would like a better sense of the reasoning process of statistics. K is the traditional “reference manual” and explains details of statistical procedures that are not covered in class.

JMP is the computer package we’ll use to for statistical calculations and graphics. Those who took Stat 603 in pre-term will be familiar with the package. It will be employed considerably in Stat 621. In particular, an essential component of 621 entails project work that will require substantial use of JMP. Although JMP is merely a tool and not the central point of the course, it is sufficiently useful that you will need it.

Course Overview

In this course, you will learn the fundamental statistical methods of regression analysis. These methods and their application will reappear in many other MBA classes and are part of the basic “tool kit” expected of all MBAs in their careers.

The Class Notes are organized into modules that will be covered in order.

- Module 0 – Getting Started
- Module 1 – Fitting Equations to Data
- Module 2 – The Simple Regression Model (SRM)
- Module 3 – Inference in Simple Regression
- Module 4 – The Multiple Regression Model (MRM)
- Module 5 – Comparative Analysis of Groups Using Regression
- Module 6 – Model Building
- Module 7 – Time Series Modeling

Before each class, you should review the material from the previous class and you should skim the Class Notes that will be covered. This is a course that builds on itself and it is crucial to not fall behind. The classes will focus on critical interpretation of results and analysis of assumptions. We will use JMP to carry out the computations, although the software itself is not the main focus of the course.

Students enrolled in this course are expected to be familiar with the key ideas covered in Statistics 603. These foundations include data displays (boxplots, histograms, quantile plots, and scatterplots), summary statistics (such as the mean, median, standard deviation, and correlation), and basic features of statistical estimation and testing (including sampling distributions, standard error, confidence intervals, t statistics and p-values). If you need to refresh your knowledge of this material, you can find all the Stat 603 materials in the Stat 621 WebCafe e-room. In particular, you should work through Assignment 3 of Stat 603 before 621 begins.

Assignments, Quizzes and Exam

There will be five weekly assignments. These are posted in the Course Materials folder on Webcafe. Although these assignments will not be collected, they are essential for the learning process and you should treat them as a requirement. Solutions will be posted for you to check your work.

There will be five short in-class quizzes throughout the course. Quizzes will take place on Wednesdays, Sept 14, 21, 28, Oct 5, 12. (See the WebCafe calendar). The first quiz, Quiz 0, will cover the material in Modules 6, 7 and 8 of the preterm course Stat 603. Assignment 1 should then be completed before Quiz 1, Assignment 2 should be completed before Quiz 2, etc.

There will be a two-hour final exam from 6-8PM on Wednesday, October 26.

Learning Team Project

A project will be assigned to each learning team early in the course. It will entail the statistical analysis of loan performance data that your team will describe in two installments. The first of these installments will be due no later than Sunday, October 2 and the second installment will be due no later than Wednesday, October 26. It will be possible to complete these installments before these due dates, and you are encouraged to submit them early.

This project must only reflect the work of your learning team. You are strictly forbidden from discussing this project with anyone outside your learning team.

Teaching Assistants (TAs)

Three TAs for Stat 621 will hold office hours throughout the course. Times and locations will be posted in the 621 Webcafe e-room.

Classroom Expectations - Concert Rules

- Class starts and ends on time.
- Sit according to the seating chart.
- Late entry or reentry only under exceptional circumstances.
- Name tents displayed.
- Phones, laptops and other electronic devices turned off.

Grading

Grades for the course will be based on the final examination (55%), quizzes (25%) and project (20%). Points will be subtracted for violations of the Concert Rules expectations.