

**Department of Statistics  
The Wharton School  
University of Pennsylvania**

STAT 621

Fall 2009

**Business Analysis Using Regression  
Syllabus**

***Instructors:***

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**Source Material**

*Required*

- Class Notes. A full copy of these notes (half size) can be purchased from Wharton Reprographics through Study.net beginning Monday, August 31. These can also be downloaded directly from the 621 Webcafe e-room.
- SAS Institute, JMP 8, downloadable from [upenn.onthehub.com](http://upenn.onthehub.com). (3 year license version for \$59.95).
- Foster, Stine, and Waterman, *Business Analysis Using Regression: A Casebook*, Springer-Verlag, Revised Printing (Note: This is a different casebook from the one used in 603. Be sure that your copy is distinguished by the phrase “Revised Printing” that appears in white lettering on the cover).

*Optional* (on reserve at Lippincott Library)

- Sall, Creighton, Lehman, *JMP Start Statistics*, 4<sup>th</sup> 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 *Business Analysis Using Regression* (BAR) casebook. Indications for the relevant readings in BBS are included throughout the Class Notes. For those who would like a supplement for the Class Notes and BAR, we recommend the 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 the details of statistical procedures more fully than can be done in class. SHL, FPP and K will also be the recommended optional supplements for 621, the fall core statistics course.

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 will entail 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 which 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. These will take place on Wednesdays, Sept 16, 23, 30, Oct 7, 14. (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 Monday, 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 which your team will report on in two installments. The first of these installments will be due no later than Sunday, October 4 and the second installment will be due no later than Monday, 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.

## **Grading**

Grades for the course will be based on the final examination (50%), quizzes (25%), project (20%) and class participation (5%).

## **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.
- All phones, laptops and other electronic devices turned off.