Business Statistics 41000: Syllabus

**Course Site:** faculty.chicagobooth.edu/nicholas.polson/teaching/41000

**Office 441:** I will be available Tuesday afternoon by appointment (email is best)

**TA:** TBA

**Course Information** This course focuses on the application of data analytic, quantitative tools in business decisions. We will start with a quick review of basic data analytic tools, followed by probability tools and concepts and statistical decision making tools. Students will learn how to use Statistics to analyze a variety of complex real world problems. Numerous empirical examples from economics, finance, marketing, politics and sports, etc are used to illustrate the material covered.

Emphasis will be placed on understanding concepts and analysis of data.

The topics covered are: (i) descriptive statistics and data visualization; (ii) random variables and expectation; (iii) modeling and inference: population and sample quantities, confidence intervals, hypothesis tests and p-values; (iv) linear regression; (v) introduction to multiple regression; (vi) basic times series analysis: autocorrelation, autoregression, the random walk.

**Lecture Notes** The lecture notes for the course are available online on the course teaching page. This includes datasets, \texttt{R} code, and previous midterm exams. They provide useful information as to the level of the course.

I recommend *Statistical Techniques in Business and Economics* by Lind, Marchal and Wathen. This classic Business Statistics book is now in its 16th edition. If you have the 15th edition that will suffice. Although some of the latter chapters of this text are advanced, most of the material is covered by the course.

**Evaluation** Grades will be determined by homework assignments (20%), a midterm exam...
(40%) and a take-home project (40%).
There are weekly homework assignments collected each week. Students are encouraged to form groups (of at most three) for homework but to write-up individual assignments. Homework assignments should be submitted in class and should have a clear and professional presentation. Late homework assignments will not be accepted. Homeworks will be graded on a check plus, check, check minus basis.

The take-home project is an individual project to be discussed only with me. The project will be graded 50% on writing and presentation and 50% on statistical analysis.

Re-grade requests should be written, detailing the reason for a re-grade. The whole exam will be subject to regrade. Regrade requests should be on a timely basis and are accepted up to a week after the work has been returned.

Computing You can choose which software you use. I recommend investing the time to learn R. The course website provides many resources to help you achieve this goal. R is the dominant software package for real world Business Analytics and is used throughout Booth Statistics courses. This open-source software is available for free download at www.r-project.org and you can find documentation there. The course will also provide analysis for statistical add-ons in Excel.

I will demonstrate data analysis in class. The website contains code in code.R for the code that generated the lecture notes. You may use either software for your project.

Prerequisites There are no prerequisites for the course. For a first class assignment reading the chapters 1-4 of the textbook will give you a good idea of the level of the class.

Students must adhere to our Booth Honor Code standards “I pledge my honor that I have not violated the Honor Code during this examination or assignment”.

Schedule See course website.