EMIS 3340/STAT 4340/CSE 4340
Statistical Methods for Engineers and Applied Scientists

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This course provides practical, hands on approach for students to learn the basic concepts of probability and statistics useful in solution of engineering and applied science problems. Topics include probability, probability distributions, data analysis, sampling distributions, estimation and simple tests of hypothesis. Students will be expected to begin their investigation into these topics by watching and listening to 15-20 minute online recordings and textbook reading at their convenience outside of class. In-class time will then be dedicated to working in small groups on relevant problems, hearing guest speakers from area engineering companies who develop and/or use statistical software in their daily work, and doing a data analysis project in SAS or SPSS, two of the most commonly used statistics and analytics software.

Class Email List

There is a class email list to which all students will be subscribed and initially will be set to the SMU email addresses. If you have an alternate email address for the class email list, please notify me within the first week of the semester.

Textbook

Probability & Statistics for Scientists and Engineers, 9th Edition
Walpole, Myers, Myers & Ye
Prentice Hall (January 2011)
ISBN-10: 0321629116 or ISBN-13: 978-0321629111

To read before the 1st day of class:
Competing on Analytics: The New Science of Winning
Authors: Thomas H. Davenport, Jeanne G. Harris
Publisher: Harvard Business School Press; 2007
ISBN: 1422103323

Learning Outcomes and Benefits

- Understand basic concepts of probability and statistics
- Appreciate where and how probability and statistics are used in large enterprises
- Work with real-world data to perform a client needed statistical analysis
- Get hands on experience with SAS or SPSS software

Topic Coverage:

Class 1(Jan 7,M)	Course Intro, Basic Concepts, Counting Techniques
Class 2(Jan 8,T)	Independence & Fundamental Rules, Conditional Probability, Bayes' Theorem
Class 3(Jan 9,W)	Discrete Random Variables and Probability Distributions, Binomial & Negative Binomial Distributions
Class 4(Jan 10, Th)	Geometric, Hypergeometric, and Poisson Distributions
Class 5(Jan 11, F)	Continuous Random Variables and Probability Distributions, Uniform and Normal Distributions
Class 6(Jan 14, M)	Exponential & Gamma Distributions, Joint Probability Distributions, Sampling & Statistical Analysis
Class 7(Jan 15, T)	Sampling Distributions, Estimation, Hypothesis Testing
Class 8(Jan 16, W)	Covariance & Correlation, Simple Linear Regression

Teaching/Learning Approach

Outside of class, students will be expected to watch 15-20 minute video clips for each of the topics above along with read textbook sections as needed to understand core/key concepts. These videos will be available to students during the winter break in case they would like to view them before the class begins. After a brief review and Q&A on watched or read material, students will spend class time doing (supervised) group or individual work on exercises, working on projects in SAS, and listening to guest speakers.

Course Requirements/Grading

Grades will be based on submitted class work, in-class mid- and final exams, SAS projects, and in class participation.

Disability Accommodations

If you need academic accommodations for a disability, you must first contact Disability Accommodations & Success Strategies (DASS) at 214-768-1470 or www.smu.edu/alec/dass.asp to verify the disability and to establish eligibility for accommodations. Then you must schedule an appointment with the professor to make appropriate arrangements.

Religious Observance: Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester, and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence. (See University Policy No. 1.9.)

Excused Absences for University Extracurricular Activities: Students participating in an officially sanctioned, scheduled University extracurricular activity will be given the opportunity to make up class assignments or other graded assignments missed as a result of their participation. It is the responsibility of the student to make arrangements with the instructor prior to any missed scheduled examination or other missed assignment for making up the work. (University Undergraduate Catalogue)