STAT 385: Methods for Data Analysis and System Optimization

Date: Spring 2009
Time: MWF 1100 – 1150; T 1800-2000 (Lab)
Location: Duncan Hall 1042; Lab is in DH Symonds II
ISBN-10: 0324662440, a.k.a. 978-0324662443

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Course Description:
The three general topic areas covered in this methodology oriented course are statistical methods including regression, sampling, and experimental design; simulation based methods in statistics, queuing and inventory problems; and an introduction to optimization methods. Excel will serve as the basic computing software.

Software. The software for the course is the DecisionTools Suite Industrial, Textbook Edition. It is available for download at http://www.palisade.com/bookdownloads/albrightwinstonzappee/ Please note that this version (REVISED 3rd edition) is for Office 2007 and above.

Grading: 50% Homework Exercises; 25% Team Projects; 25% Concept Quizzes. Late policy: Latehomeworks will not be accepted without a university approved excuse. 20% penalty for HW turned in by next class; no credit for later than this. The instructor will not be able to print out emailed homework. You might be able to negotiate with the grader.

Team Project: A Case Study
There are various case studies included in your textbook. You and your team will choose a case to solve. You will be expected to turn in a written report and give an oral presentation during the last week of class. You may pick your own team members, but the size of each team will be limited to an appropriate number.

Quizzes
There will be closed book quizzes given during the class period. These quizzes will cover concepts discussed in class. They will be announced.

Laboratories
Occasionally a dedicated Lab will be assigned. Weekly lab time is set aside for you to work on and receive help on homework and team projects. Attendance is optional.
Attendance:
Students are expected to attend class. If a student misses a class, then he or she is responsible for keeping up with the course material and finding out if any exams, quizzes, or homeworks have been assigned or scheduled.

Course Content: We hope to cover most of this material. Topics/chapters include

Part I: GETTING, DESCRIBING, AND SUMMARIZING DATA.
Introduction to Data Analysis and Decision Making.

2. Describing Data: Graphs and Tables.


4. Getting the Right Data.

Part II: PROBABILITY, UNCERTAINTY, AND DECISION MAKING.

6. Normal, Binomial, Poisson, and Exponential Distributions.


Part III: STATISTICAL INFERENCE.
8. Sampling and Sampling Distributions.


Part IV: REGRESSION, FORECASTING, AND TIME SERIES.


13. Time Series Analysis and Forecasting.

Part V: DECISION MODELING.


16. Introduction to Simulation Modeling.
Introduction. Real Applications of Simulation. Probability Distributions for Input Variables. Simulation with Built-In Excel Tools. Introduction to @RISK. The Effects of Input Distributions on Results. Conclusion.

17. Simulation Models.
Rice Honor Code:
All examinations are conducted under pledged conditions. Homework may be worked on with other class members but each student must submit their own work for credit. You should indicate with whom you worked when applicable. No direct copying is allowed. You may not refer to material from previous offerings of this course, including problem sets, solution sets, and/or quizzes. Note that the use of prior years’ and other solutions to text exercises is considered UNAUTHORIZED AID.

Disabilities:
Any student with a documented disability needing academic adjustments or accommodations is requested to speak with me during the first two weeks of class. All discussions will remain confidential. Students with disabilities should also contact Disability Support Services in the Ley Student Center. Further information is available at http://dss.rice.edu/.