

MBA 612 – Decision Modeling and Data Analysis
Section 1, MW 3:15-5:00 PM, Spring, 2004
Prof. Stephen J. Huxley

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Office Hours: MW 2-3PM, WR 5:30-6PM plus 30 minutes following class or by appt.
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Prerequisites: - MBA 602 Graduate Introduction to Business Mathematics or equivalent
- MBA 603 Introduction to Business Statistics or equivalent
- Familiarity with elementary spreadsheet operations

Course Description: *This course develops the skill and perspective of using quantitative techniques to gain insight into the resolution of practical business problems. Methodologies include decision analysis (decision trees, decision criteria, value of information, risk attitude, Monte Carlo simulation); multiple regression models (relationship modeling, time series analysis and forecasting); and optimization models (linear, nonlinear, and integer programming applications in marketing, finance, and other fields). The emphasis is on model formulation in a spreadsheet environment and the interpretation of results, rather than mathematical theory.*

Primary Learning Goal:

To be able to make effective operational and strategic decisions using concepts, methods, and quantitative tools from the fields of decision modeling and data analysis.

Secondary Learning Goals:

- Develop quantitative models for structured and unstructured decision problems by identifying controllable factors, uncontrollable factors, performance measures, and relationships.
- Develop and analyze financial and other types of planning models and perform sensitivity analysis to identify critical factors.
- Measure uncertainty using probability and perform Monte Carlo simulation to gain insight into practical business problems.
- Develop and analyze decision tree models for sequential decision problems and determine value of information.
- Develop, solve, and interpret the results of spreadsheet optimization models.
- Use descriptive statistics and charts to summarize cross-sectional and time series data.
- Develop regression models to explain variation, measure relationships, and make predictions.
- Identify patterns in time series data, develop appropriate models, and make forecasts.
- Understand the fundamentals of statistical logic and experimental design.
- Become familiar with statistical quality control concepts.
- Attain proficiency in the use of spreadsheets for quantitative analysis.

As an MBA graduate, most of your colleagues will expect you to be able to handle projects involving not only basic number crunching with current technology but also analyzing complex situations that require more than common sense to reach the best decision. Management problems have sometimes been classified as “people problems” and “technical problems.” This course is designed primarily to deal with technical problems and the methodologies that have been designed to deal with them. Specifically, when you pass this course you should feel that: 1) you have added significantly to your knowledge of statistical and quantitative issues; 2) you can recognize situations where higher level analyses are needed; 3) you have adequate familiarity with Excel’s data analysis and decision modeling capabilities; 4) you can handle routine quantitative matters with a comfortable level of confidence, and 4) you know enough theory so as to evolve as the current generation of techniques is replaced by the next.

Required Textbooks:

1. Huxley, Lecture Notes for Decision Modeling/Data Analysis, Version 1.1 (2004).

You must bring these notes to class each time.

2. Ragsdale, Spreadsheet Modeling and Decision Analysis, 4th ed. (South-Western, 2004.)

Website support: <http://ragsdale.swlearning.com>

Errata for the 4th edition:

http://www.swlearning.com/quant/ragsdale/fourth_edition/ragsdale.html

A brief review of Excel basics will be given early in the semester, but familiarity with the fundamentals of Windows and spreadsheets is expected. The Ragsdale text demonstrates the analytical power that has been or can be built into Excel. If you are unfamiliar with Excel, you have not met the prerequisite requirements to be in the class and should withdraw before we begin.

3. Middleton, *Data Analysis Using Microsoft Excel: Updated for Office XP* (Duxbury, 2004)

Much of your homework will come from Prof. Middleton popular manual on the data analysis features of Excel. Completing these exercises will bring you close to becoming a “power-user” of Excel.

4. Tanur, *Statistics, A Guide to the Unknown*, 3rd Ed. (Wadsworth 1989)

A series of three to five page summaries in plain English about applied statistics in a variety of disciplines (there is no penalty for reading unassigned articles).

5. Paulos, *Innumeracy* (Vintage, 1990)

One of the few mathematics books ever to make it to the NY Times best seller list.

6. Paulos, *Beyond Numeracy*, (Vintage, 1992)

Beyond Numeracy consists of a series of over 70 short essays on various mathematical topics. I have tried to match the essays to topics discussed in class. Sometimes this is a loose fit because the book is not designed specifically for this course, but as MBA students, you need to at least have a cursory knowledge of a broad range of quantitative topics, and I know of no better book that does this.

7. Familiarity with the Internet. Conventional wisdom holds that most people do not understand the technical aspects of optimization, and websites are visited primarily by the professionals in the field (and students who have progressive instructors ;-). By visiting the sites listed below as part of this class, you will hopefully be able to maintain a link to this area of expertise forever.

1. Institute For Operations Research and Management Science (INFORMS):
<http://www.informs.org/nonmembers.html>
2. International Federation of Operations Research Societies (IFORS)
<http://www.ifors.org>
3. Net-Enabled Optimization System (NEOS):
<http://www.ece.northwestern.edu/OTC/>
4. World-Wide-Web for Operations Research and Management Science (WORMS): <http://www.worms.ms.unimelb.edu.au/toc.html>
5. Data Envelopment Analysis -
 - a. DEA History, tutorials, links, papers, etc.:
<http://www.deazone.com/about/index.htm>
 - b. Banxia (developers of Frontier Analyst): <http://www.banxia.com>

Optional (buy only if needed for review):

5. Huff, *How to Lie with Statistics* (1993)

A thin paperback, this old book is still considered a timeless classic. The clarity of the writing style and the humorous examples make it an easy read. The prices and values he uses from the 1950's can be converted to current prices by multiplying by six, but it is remarkable how the flaws he points out are as prevalent today as they were then. This is optional for those who worry they did not really get statistical background needed for graduate level quant courses.

6. Any statistics text or **Kazmier, *Business Statistics*, 3rd ed., Shaum's Outline Series, McGraw-Hill, (1996).**

In an effort to help reduce your textbook costs, you may use whatever statistics text you wish (such as those by Sincich, Levin, Lapin, etc.). As a reference source, I believe all are about equal. If you saved a copy of your old stat book, it will probably do fine provided it contains examples of computer printouts. A list of [Kazmier's chapters](#) is listed below. If you do not have access to any other text reference, go to the library and get one, buy Kazmier, or see me.

Video Tapes: This course will utilize a number of video tapes from the Annenberg/CBP Project (http://www.learner.org/search/advanced_browse.html) related to the material covered in class. "AAO" will refer to the "Against All Odds" series for data analysis, and "FAPP" will refer to "For All Practical Purposes" series on applied mathematics. Other tapes will also be used.

Library: A few optional articles on topics related to class have been placed on reserve in the library along with old term papers, sample exam questions, etc. These can also be found on my website.

Assessment:

Homework = 20%

Quizzes = 20%

Midterm = 25%

Final = 35%

Grading: Letter grades for the course will be based on the following approximate scale: 93 percent and above = A, 88-92 percent = A-, 85-87 percent = B+, 75 to 84 percent = B. Since this is a graduate class, I expect no one to get below 75 percent, but should anyone fail to achieve this level, grades of B- down through F may be awarded.

Exams: You may use any text and Middleton for the exams but **not** the Lecture Notes (Paulos, and Tanur material will be only on the quizzes). You may bring in **two** double-sided sheets of study notes for the midterm, **four** for the final exam, but they must contain only original print or writing - absolutely no photocopies of anything. I retain the right to inspect and remove any study notes that violate this condition. Calculators are permitted but not laptops. If you cannot attend an exam for reasons beyond your control, notify me before test time if you wish to be eligible for a make-up.

Quizzes: You should anticipate a short quiz (closed book) each week on the Tanur, Paulos, and/or handout readings, homework topics, and/or prior lecture material. I will drop your lowest score. If you have done the homework and readings, come to class and paid attention, these quizzes should present no difficulty. If you have not kept up, however, please keep your whining out of earshot.

Homework Assignments: You must email your homework to me according to the instructions below. Many of your weekly homework assignments will come from Middleton or Ragsdale. You will often be simply duplicating their examples. The advantage to this is you get instant feedback that you are doing it correctly. The disadvantage is that you could conceivably get the correct result by blindly following the step-by-step procedures without really learning how you got it, especially if you fail to read the supporting material and understand the explanations. Your own education is at stake here, and I presume you are mature enough to avoid the temptation to “just get it done” without understanding it. If you succumb to a “monkey-see monkey-do” modus operandi, your knowledge base will be very shallow, and your passing grade will merely represent willful self-delusion. The real world is seldom fooled for long.

Homework is to be turned in individually, but I encourage you to help each other. As always, the educational value of the class is of paramount importance. If this purpose is best served by seeking voluntary assistance from others in the class, you should feel free to do so. Anyone who feels burdened by a DLP (Dumb Lazy Parasite) should see me.

You may also seek the assistance of the teaching assistant for this course – details will be announced in class.

You can check your homework score on the website, usually posted within one week of the due date. A score of 10 will tell you that you did it perfectly. If you follow the instructions faithfully, you should end up with a perfect score on all homework assignments. If you have any questions about your homework, you can email your request to me and I will forward it back to you. In tallying your final grades, I will drop your lowest homework score. I also reserve the right to award extra credit to students whose work is not only tidy and neat but also shows exemplary style. It is one thing to get the generically correct answer. It is something else to get it and present it with design, appearance and style. Anybody can make a movie – Steven Spielberg does it with style.

Instructions for Emailing Homework – Please follow closely. If you have any questions, please ask me.

1. Excel homework must be emailed to me **before the beginning** of the class meeting on the due date. Late homework will be eligible for only half credit if turned in within one week after the due date. Because computers and email traffic is sensitive to small errors, you **must** follow the rest of these instructions precisely to be eligible for credit. Send it to: huxleyhomework@usfca.edu and send a copy to yourself to prove you sent it on time in case there is a problem.

2. In the email **Subject** line, indicate the course, section (MW3 for the Monday 3:15-4:55PM class, W6 for the Wednesday 6:15-9:55PM class), homework number, and name. For example, John Smith, SID number 123-45-6789, is enrolled in MBA 612 Decision Modeling and Data Analysis, in the M 3:15 PM section and is emailing his **second** Excel homework. In his email, he would put

Subject: 612MW3HW2smitjo.xls

3. Attach the file using the same name as the subject line. For John Smith, this would be

Attachment file name: 612MW3HW2smitjo.xls

4. In cell A1 on the first sheet (or ‘tab’ or ‘ply’) of the homework, type the same file name again. In cell A2, type your real name in full, in A3, your SID, in A4, you section, and in A5, the homework number. John Smith would type:

	A
1	612MW3HW2smitjo.xls
2	John Smith
3	123-45-6789
4	M 3:15 PM

5 Homework 2

5. When doing your homework, put each figure on a **separate** sheet (or ‘tab’ or ‘ply’) within the same workbook. For example, if Homework 2 says to replicate Figures 4.3, 4.6, 4.7, and 4.9, then the first sheet’s tab should be renamed from “Sheet 1” to “HW2 Fig 4.3.” (Right click on the tab for the ‘Rename’ command; you can also insert new sheets with the right click as needed.) When you save the file, save it so that the appropriate figure is the first thing a person sees when viewing that sheet (to go the Cell A1 quickly, use Control Home on your keyboard). If you do not complete a particular figure, you should still rename the tab and type ‘Not Done’ in Cell A1.

6. Save all the work assigned for the homework in a single Excel file and send it only once. Homework sent in bits and pieces cannot be given any credit. Your submission will be opened only once, and only the first one received will count, so do not send it until it is completely ready and all parts are finished. (Put yourself in the place of the grader – opening many files and searching for randomly placed material is a nuisance and waste of time.)

Again, if you follow these instructions faithfully, you should end up with a perfect score on the homework section of the course.

Topical Coverage: You should read the Tanur, Paulos and handout readings *before* class and be prepared for a quiz on that material plus material from prior lectures. Readings in the two books by Paulos are distinguished as BN = *Beyond Numeracy and I = Innumeracy*. Ragsdale material will not be on the quizzes. If you are using a reference text other than Kazmier, you should read the equivalent topics in your own text. You will get the most out of the lectures if you read Ragsdale first, but you can also use it as a reference text for lecture material. For homework, “Figures 4.6” means read and work through the example in Chapter 4 to understand the procedure and theory (consult another text if the theory is not clear), then do all the steps necessary to get the result in Figure 4.6.

Monday

Week Date Topic

1 1/26/04 Introduction, Statistical Logic, and Design of Experiments (“DOE”)

Videos: Powers of Ten; AAO 11 – Causation

Before Week 2, you should do the following:

1. Ragsdale: Chp 1
2. Middleton: Chps. 1, 2, 3, 7, 8 - this material is considered prerequisite for this class. Review as needed. If additional review of Excel is needed, see <http://www.usd.edu/trio/tut/excel>)

Advance Notice: Before Week 3, you should do the following:

1. Read and prepare for a quiz on (excluding Ragsdale):
 - a. Ragsdale: Chp. 9, Sections 9.0-9.10 (9.5 Optional)
 - b. Middleton: Chps. 4, 5, 9, 11
 - c. Paulos BN: Articles starting on page: 56 (Correlation...), 141 (Mean...), 202 (Quantifiers...), 227 (Statistics...)
 - d. Tanur: Articles starting on page 93 (Measuring...), and 53 (Does...)
 - e. Paulos I: Intro + Chapter 1
 - f. Handouts: 1) *Design of Experiments*, 2) *Designing Customer Surveys*, and 3) *America’s Heartland*.
2. Complete and email Homework #1:
 - a. Homework 1 on descriptive statistics in the Lecture Notes. (Note: To save yourself some typing, Homework #1 data may be found on the course website: www.usfca.edu/fac-staff/huxleys.)
 - b. Middleton:
 - 1) Figures 4.3 (skip Column E), 4.6, 4.7, and 4.9 (Excel’s Descriptive Statistics)
 - 2) Figures 9.2 (Conf. Intervals – Note: Middleton assumes you have used the Insert/Name/Define command to name the MPG data “Data” – see his Section 9.2).
 - 3) Figure 11.7 (Hypothesis testing – two means)
 - 4) OPTIONAL (20 percent extra credit on Homework #1): Figures 5.8, 5.10, 5.11, 5.12, 5.13, 5.14, 5.15, 5.16 (Pivot Tables. Note - pivot tables are sometimes easier to work with if you Copy/Paste Special/Values the entire table before performing final operations.)

3. Optional Reading **if needed for review:**

- Kazmier: Chp. 1-4, 7, 21 (Sections 21.1 and 21.2 on parametric vs. nonparametric statistics) or equivalent from some other statistics text.
- b. Huff: Intro + Chps. 1-8

2 **2/2/04 Experimental Design – continued; Principles of Model Analysis**

Video: AAO 12 - Experimental Design

Before Week 3, you should do the following:

1. Read and prepare for a quiz on (excluding Ragsdale):
 - a. Ragsdale: Chp. 9, Sections 9.0-9.10 (9.5 Optional)
 - b. Middleton: Chps. 4, 5, 9, 11 (Note: Review Chps. 1,2,3, 7, 8 **if needed for review** – this material is considered prerequisite for this class)
 - c. Paulos BN: Articles starting on page: 56 (Correlation...), 141 (Mean...), 202 (Quantifiers...), 227 (Statistics...)
 - d. Tanur: Articles starting on page 93 (Measuring...), and 53 (Does...)
 - e. Paulos: Intro + Chapter 1
 - f. Handouts: 1) *Design of Experiments*, 2) *Designing Customer Surveys*, and 3) *America's Heartland*.
2. Complete and email Homework #1:
 - a. Homework 1 on descriptive statistics in the Lecture Notes. (Note: To save yourself some typing, Homework #1 data may be found on the course website: www.usfca.edu/fac-staff/huxleys.)
 - b. Middleton:
 - 1) Figures 4.3 (skip Column E), 4.6, 4.7, and 4.9 (Excel's Descriptive Statistics)
 - 2) Figures 9.2 (Conf. Intervals – Note: Middleton assumes you have used the Insert/Name/Define command to name the MPG data “Data” – see his Section 9.2).
 - 3) Figure 11.7 (Hypothesis testing – two means)
 - 4) OPTIONAL (20 percent extra credit on Homework #1): Figures 5.8, 5.10, 5.11, 5.12, 5.13, 5.14, 5.15, 5.16 (Pivot Tables. Note - pivot tables are sometimes easier to work with if you Copy/Paste Special/Values the entire table before performing final operations.)
3. Optional Reading **if needed for review:**
 - Kazmier: Chp. 1-4, 7, 21 (Sections 21.1 and 21.2 on parametric vs. nonparametric statistics) or equivalent from some other statistics text.
 - b. Huff: Intro + Chps. 1-8

3 **2/09/04 Simple Regression Analysis**

Be prepared for **Quiz 1** on material and items 1 and 2 from Weeks 1 and 2.

Due by email before this class: Homework #1 – See Item 2 above (parts a and b)

Before next week, you should do the following:

1. Read and prepare for a quiz on (excluding Ragsdale):
 - a. Ragsdale: Chp. 9, Sections 9.11- 9.19
 - b. Middleton: Chp. 6, 12, 14, 15
 - c. Paulos BN: Articles starting on page: 150 (The Multiplication...), 187 (Probability), 218 (Scientific...), 237 (Tautologies...)

- d. Tanur: Articles starting on page: 41 (Cigarettes...), 161 (Preliminary...)
- e. Paulos I: Chapter 2
- 2. Complete Homework #2:
 - a. Answer any three essay questions from the exercises handed out in class. Type your answers on **hard copy** and submit at the beginning of class.
 - b. Middleton homework to be emailed:
 - 1) Figures 6.2, 6.3, 6.4 (Correlation)
 - 2) Figures 12.1, 12.3, 12.5, 12.6 (Chi Square)
 - 3) Figures 14.7, 14.10, 14.11 (Simple Linear Regression)
 - 4) Figures 15.3, 15.4, 15.5, 15.6, 15.7, 15.8, 15.10, 15.11 (Simple Nonlinear Regression)

(Note: No Class Monday 2/16/04 –President’s day)

4 2/18/04 Multiple Regression Analysis

Be prepared for **Quiz 2** on material and items 1 and 2 from last class.

Due by email before class: Homework #2 – See Item 2 above (parts a and b)

Before next class, you should do the following:

- 1. Read and prepare for a quiz on (excluding Ragsdale):
 - a. Ragsdale: Chp. 11, Sections 11.0-11.6 (Note: Optional reading on more sophisticated exponential smoothing models: 11.7-11.14)
 - b. Middleton: Chp. 16,17
 - c. Paulos BN: Articles starting on page: 62 (E), 71 (Exponential Growth),
 - d. Tanur: Articles starting on page: 79 (Statistical...)
 - e. Paulos I: Chapter 3
- 2. Complete Homework #3
 - Middleton:
 - 1) Figures 16.2, 16.3, 16.4, 16.5 (Multiple Regression)
 - 2) Figure 17.4 (Categorical Variables)

5 2/23/04 Forecasting Fundamentals

Be prepared for **Quiz 3** on material and items 1 and 2 from last class.

Due by email before class: Homework #3 – See Item 2 above.

Before next class, you should do the following:

- 1. Read and prepare for a quiz on (excluding Ragsdale):
 - a. Ragsdale: Chp. 11, Sections 11.15-11.20, 11.22-11.23 (Note: Option reading on Ragsdale’s Crystal Ball add-in: 11.21)
 - b. Middleton: Chp. 16, 17
 - c. Paulos: Articles starting on page: 47 (Complexity...), 98 (Golden...)
 - d. Tanur: Articles starting on page: 249 (Estimating...)
 - e. Paulos I: Chapter 4
- 2. Complete Homework #4 The Independence Calculation (see Lecture Notes, p. 97-101)

6 3/01/04 Forecasting - Continued

Be prepared for **Quiz 4** on material and items 1 and 2 from last class.

Due by email before class: Homework #4 – See Item 2 above.

Before Week 9, you should do the following:

1. Read and prepare for a Midterm in Week 9:
 - a. Ragsdale: Review past material
 - b. Middleton: Review past material plus Chp. 18, 19, 20
 - c. Paulos: Articles starting on page: 38 (Coincidences)
 - d. Tanur: Articles starting on page: 227 (The Development...)
 - e. Paulos I: Chapter 5 and Close
2. Complete Homework #5:
 - a. Middleton:
 - 1) Figures 18.8, 18.9 (Autocorrelation)
 - 2) Figures 19.6, 19.7 (Time Series Smoothing)
 - 3) Figures 20.4, 20.5 (Time Series Seasonality)

7 3/08/04 Statistical Quality Control Introduction

Video: AAO: Program 18 (SPC)

Be prepared for **Quiz 5** on material and items 1 and 2 from last class.

Due by email before the class: Homework #5 – See Item 2 above

Before next class, you should do the following:

1. Read and prepare for a quiz on (excluding Ragsdale):
 - a. Ragsdale: Before Week 10, you should read Chp. 2, Sections 2.0-2.12
 - b. Middleton: No assignment
 - c. Paulos: Articles starting on page: 136 (Matrices...)
 - d. Tanur: Articles starting on page: 218 (How...)
 - e. Paulos I: Completed – no further assignments
 - f. Handout materials: “Making Things Right” by W. E. Deming
2. Homework: No homework will be due – prepare for the midterm.
3. Kazmier or your own text: Chapter 20 (Statistical Process Control)

8 3/15/04 Spring Recess – No Classes for week

9 3/22/04 Statistical Quality Control (MIDTERM Wednesday 3/24)

Video: Concepts of Variation

Be prepared for the **midterm examination** covering material from Weeks 1-6 (through forecasting).

Before next class, you should do the following:

1. Read and prepare for a quiz on (excluding Ragsdale):
 - a. Ragsdale: Chp. 2, Sections 2.0-2.12
 - b. Middleton: Chp. 10
 - c. Paulos: Articles starting on page: 27(Calculus), 133 (Linear ...)
 - d. Tanur: Articles starting on page: 241 (Optimization...)
2. Complete Homework #6:

Middleton: Follow the example in Section 10.1 to get Figures 10.7, 10.9 (SPC Charts).

10 3/29/04 Optimization - Concepts

Video: FAPP: Linear Programming

Be prepared for **Quiz 6** on material from last week.

Due by email before the class: Homework #6 – See Item 2 above

Before next class, you should do the following:

1. Read and prepare for a quiz on (excluding Ragsdale):
 - a. Ragsdale: Chp 3, Sections 3.0 – 3.7 and 3.10, Chp. 4, Sections 4.0-4.6 (Optional reading: Secs. 3.8-3.9, 3.11-3.13, 4.7)
 - b. Middleton: Completed – no further assignments
 - c. Paulos: Articles starting on page: 32 (Chaos...), 260 (Variables...),
 - d. Tanur: Articles starting on page: 60 (The Plight...)
2. Start Homework #7 (due Week 12) by attempting to formulate the “Baby LP” problems beginning on page 308 and the “Additional LP” problems on page 321 in the Lecture Notes. (You can check your work against the solutions on pages 319 and 323 respectively).

11 4/5/04 Optimization on Excel's Solver

Be prepared for **Quiz 7** on material from last week.

Before next class, you should do the following:

1. Read and prepare for a quiz on (excluding Ragsdale):
 - a. Ragsdale: Chp. 3, Sec. 3.14, Chp. 5, Sec. 5.4, Chp. 6, Secs. 6.0-6.9
 - b. Paulos: Articles starting on page: 184 (Prime Numbers),
 - c. Tanur: Articles starting on page: 198 (The CPI)
2. Complete Homework #7: Solve problems 2, 3, 4, 7, and 8 “Baby LP’s” plus the part-time staffing example on page 217 in the Lecture Notes using Solver on Excel.

12 4/12/04 Applications of Optimization: Transportation, Staffing, DEA, etc.

Video: Patrol Officer Scheduling for the SFPD

Be prepared for **Quiz 8** on material from last week.

Due by email before the class: Homework #7 – See Item 2 above

Before next class, you should do the following:

1. Read and prepare for a quiz on (excluding Ragsdale):
 - a. Ragsdale: Chp. 12, Secs. 12.0-12.3, Chp. 13, Secs. 13.0-13.2 (Optional reading: Secs. 12.4-12.17)
 - b. Paulos: Articles starting on page: 147 (Monte Carlo...)
 - c. Tanur: Articles starting on page: 151 (How Accountants...)
2. Complete Homework #8: Problems to be handed out.

13 4/19/04 Deterministic and Monte Carlo Simulation

Be prepared for **Quiz 9** on material from last week.

Due by email before the class: Homework #8 – See Item 2 above

Before next class, you should do the following:

1. Read and prepare for a quiz on (excluding Ragsdale):
 - a. Ragsdale: Chp. 13, Secs. 13.3-13.6 (Optional reading: Secs. 13.7-13.12)
 - b. Paulos: Articles starting on page: 225 (Sorting...), 257 (Turing...)
 - c. Tanur: Completed – no further assignments
2. Complete Homework #9: Do one of the two following assignments:
 - 1) Duplicate the Freight Car problem discussed in the Lecture Notes, p. 245 using Excel **or**

- 2) Duplicate Ragsdale's example beginning in Section 12.4 (A Corporate Health Insurance Example) using Crystal Ball.

14 4/26/04 Queuing, Sequencing, and Scheduling

Be prepared for **Quiz 10** on material from last week.

Due by email before the class: Homework #9 – See Item 2 above

Before next class, you should do the following:

1. Read and prepare for a quiz on (excluding Ragsdale):
 - a. Ragsdale: Chp. 15, Secs. 15.0-15.15 (Optional reading: Secs. 15.16-15.19)
 - b. Paulos: Articles starting on page: 169 (Partial...), 262 (Voting ...), 91 (Game Theory)
2. Complete Homework #10: Problems to be handed out.

15 5/3/04 Decision Analysis

Be prepared for **Quiz 11** on material from last week.

Due by email before the class: Homework #10 – See Item 2 above

Before next class, you should do the following:

1. Prepare for the Final Exam
2. Complete Homework #11 and email it before the final exam: Duplicate Ragsdale's example 15.3 using TreePlan.

16 5/10/04 Monday – Review

17 5/12/04 Wednesday - Final Exam (3:15-6:00PM)

Business Statistics, 3rd Ed., (Shaum's Outline Series - McGraw Hill)
By Leonard Kazmier (1996)
Table of Contents

(Read equivalent material in any other post-1996 statistics text)

- Chapter 1 ANALYZING BUSINESS DATA
 - Chapter 2 STATISTICAL PRESENTATIONS AND GRAPHICAL ANALYSIS
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 - Chapter 4 DESCRIBING BUSINESS DATA: MEASURES OF VARIABILITY
 - Chapter 5 PROBABILITY
 - Chapter 6 PROBABILITY DISTRIBUTIONS FOR DISCRETE RANDOM
VARIABLES: BINOMIAL HYPERGEOMETRIC, AND POISSON
 - Chapter 7 PROBABILITY DISTRIBUTIONS FOR CONTINUOUS RANDOM
VARIABLES: NORMAL AND EXPONENTIAL
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THE MEAN
 - Chapter 9 OTHER CONFIDENCE INTERVALS
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 - Chapter 11 TESTING OTHER HYPOTHESES
 - Chapter 12 THE CHI-SQUARE TEST
 - Chapter 13 ANALYSIS OF VARIANCE
 - Chapter 14 LINEAR REGRESSION AND CORRELATION ANALYSIS
 - Chapter 15 MULTIPLE REGRESSION AND CORRELATION
 - Chapter 16 TIME SERIES ANALYSIS AND BUSINESS FORECASTING
 - Chapter 17 INDEX NUMBERS FOR BUSINESS AND ECONOMIC DATA
 - Chapter 18 DECISION ANALYSIS: PAYOFF TABLES AND DECISION TREES
 - Chapter 19 DECISION ANALYSIS: THE USE OF SAMPLE INFORMATION
 - Chapter 20 STATISTICAL PROCESS CONTROL
 - Chapter 21 NONPARAMETRIC STATISTICS
-