OPRE 6301
Quantitative Introduction to Risk and Uncertainty in Business
Project Management Program
Fall 2006

Instructor:

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Office Hours:

MA 3.208 Mondays and Wednesdays 5:00 – 6:45
Otherwise by Appointment

Student Learning Objectives/Outcomes:

1) **Be able to organize and summarize raw data**
2) **Be able to build and evaluate a regression model from raw data**
3) **Be able to apply the basic rules of Probability Theory**
4) **Be able to apply the concept of a random variable to solve business problems**
5) **Be able to apply the Normal, Poisson, and Binomial Distributions to solve Business Problems**
6) **Be able to simulate data from the Normal, Poisson, and Binomial Distributions**
7) **Be able to identify significant changes in averages and proportions**
8) **Be able to determine if two populations have the same mean or the same proportion**
9) **Be able to determine if several populations have the same mean**

Text:

STATISTICS FOR MANAGEMENT AND ECONOMICS, 7th EDITION, by G. KELLER, DUXBURY PRESS, 2005.

Grades:

Course grade is based solely on three case studies (take-home examinations) given at the end of each module described below. There is no final exam. Each exam will be graded on the following scale:

A 94 – 100
B 87 – 93
C 75 – 86

The final grade is the arithmetic average of the scores on the three exams.

Textbook practice problems for each section are suggested below. These are designed to help you understand the techniques and concepts introduced in the course and their completion does not count toward your grade.

Supplementary Materials:

Lecture notes for the course and EXCEL files that will be used in the lectures can be downloaded from my web site www.utdallas.edu/~wiorkow/

Class Procedure:

Each module corresponds to approximately 12 hours of class contact.

This course assumes that you are using a computer statistical package to implement the statistical procedures. All lectures use Microsoft EXCEL for illustrative purposes.

You are responsible for the material covered in the class sessions, a small portion of which is not covered in the text book. Conversely, you are not responsible for material in the text book not covered in the lectures.

Module 1 – Descriptive Statistics

Textbook Chapters: **Chapter 1; Appendix 1B**
Chapter 5
Chapter 2
Chapter 3
Chapter 4 [Add "t" and "z"]
Chapter 17; 17.1 – 17.7
Chapter 18; 18.1 – 18.3

Chapter 19

Illustrative Problems: **5.11, 5.12, 5.14, 5.15**
2.12, 2.14, 2.15, 2.20, 2.24a, 2.28.2.43, 2.44a, 2.46, 2.49, 2.53
2.54, 2.64, 2.66, 2.68, 2.70, 2.72, 2.106
3.9
4.1, 4.2, 4.4, 4.6, 4.8, 4.10, 4.18, 4.32, 4.36, 4.60, 4.64, 4.68,4.86
17.6, 17.8, 17.16, 17.18, 17.98 (a,b,c), 17.104
18.8, 18.10, 18.12, 18.40
19.4, 19.8, 19.16, 19.22, 19.40, 19.48

Module 2 – Probability and Random Variables

Textbook Chapters: **Chapter 6 [Add Bayes Theorem; Basic Portfolio Analysis]**
Chapter 7 [Add Poisson Approximation to the Binomial]
Chapter 8: 8.2 – 8.3 [Add Normal Approximation to the Poisson]
[Add simulation of random variables using the computer]
Chapter 23 [Add Risk Criteria; Decision Simulation]

Illustrative Problems: **6.8, 6.28, 6.36, 6.40, 6.42, 6.44, 6.56, 6.58, 6.62, 6.66, 6.70, 6.80**
6.96, 6.100
7.20, 7.30, 7.32, 7.54, 7.68, 7.70, 7.72, 7.74, 7.76, 7.96, 7.98,
7.104, 7.108, 7.112, 7.116, 7.118, 7.120, 7.122, 7.126, 7.130
7.132, 7.136
8.34, 8.36, 8.38,8.40, 8.42, 8.54, 8.56, 8.64, 8.86, 8.88, 8.90
8.94, 9.30, 9.32, 9.36, 9.38, 9.42 (Not a typo)
23.10, 23.12, 23.14a, 23.16, 23.32 (a, b), 23.44

Module 3 – Statistical Estimation and Inference

Textbook Chapters: **Chapter 9**
Chapter 11: 11.1 – 11.3
Chapter 10
Chapter 12: 12.1, 12.3 – 12.5
Chapter 13: 13.1 – 13.3
Chapter 15: 15.1, 15.6
Chapter 16: 16.1 – 16.3

Illustrative Problems: **9.22, 9.28, 9.30, 9.32, 9.36**
11.10, 11.16, 11.44
10.26, 10.32, 10.36, 10.38, 10.52, 10.56
12.16, 12.22, 12.30, 12.34, 12.88, 12.92a, 12.122, 12.124
13.4, 13.18. 13.26, 13.46, 13.70, 13.88, 13.100
15.8, 15.10, 15.12, 15.16, 15.60, 15.70, 15.72, 15.74, 15.76
16.12, 16.14
(Note: The book uses an alpha value of .10. This is bad practice, use alpha = .05 or .01).

Tentative Class Schedule

Date	Activity	Exam Schedule
Saturday, July 15 Morning	**Begin Module 1**	
Saturday, Aug 12 Morning	**Continue Module 1**	
Saturday, Sept 23 Morning	**Finish Module 1**	**Exam 1 Distributed**
Saturday, Oct 21 Morning	**Begin Module 2**	**Exam 1 Due**
Saturday, Nov 11 Afternoon	**Continue Module 2**	
Saturday, Dec 9 Morning	**Finish Module 2**	**Exam 2 Distributed**
Saturday, Jan 13 Morning	**Begin Module 3**	**Exam 2 Due**
Saturday, Jan 13 Afternoon	**Continue Module**	
Saturday, Feb 10 Morning	**Finish Module 3**	**Exam 3 Distributed**
		Exam 3 Due on Friday Of March Session