BA 578

Statistical Methods

Course Syllabus (Fall 2009)

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OFFICE **BA323**

OFFICE HOURS

Tue&Th 9:15am- 12:15pm;

Phone: **903.886.5687office)**
903.886.5693 (fax)

Required Text:

Business Statistics, In Practice Bruce L. Bowerman, Richard T. O'Connell, Emily S. Murphree, McGraw-Hill Irwin, 5th edition, ISBN-007-724-253X.

Course Description:

A course dealing with statistical concepts including measures of central tendency and dispersion, probability distributions, the Central Limit Theorem, sampling, estimation, hypothesis testing, analysis of variance, correlation and regression analysis, multiple regression and statistical forecasting.

Course Objectives:

The objective of this course is to provide an understanding for the graduate business student on statistical concepts to include measurements of location and dispersion, probability, probability distributions, sampling, estimation, hypothesis testing, regression, and correlation analysis, multiple regression and economic forecasting. By completing this course the student will be ale to:

1) clearly and correctly define and estimate the variance and the standard deviation.

2) use the binomial distribution tables to solve a problem.

3) use the normal distribution table to solve a problem.

4) understand and use the central limit theorem.

5) test a hypothesis as well as calculate confidence interval for a population parameter.

6) test a statistical hypothesis using Z and p-values.

7) perform statistical test for the difference between two sample means.

8) compute and interpret the results of a one-way ANOVA.

9) compute and interpret the results of a Chi-Square test for independence as well as a test for homogeneity.

10) compute and interpret the results of regression and correlation analysis.

11) determine from an Excel print out, the analytical factors for a multiple regression problem analysis.

12) perform forecasting for time series using stationary methods, trend methods and seasonal methods.

Grading Policy:

Grade Component	**Points**
a. ASSIGNMENTS	275
a. MID-Exams 1, 2, 3 (125 points each)	375
b. Comprehensive final exam	350

* Final grade in the course is the average from the student's total score from the sum of (assignments+exam1 + exam2 + exam3 + final) above.

Average Range	Grade
90%-100%	A
80%-89%	B
70%-79%	C
60%-69%	D
Below 60%	F

EXAMS SCHEDULE:

Exams	Exams Uploaded on*	Due Date**	Chapters Covered
Exam 1	September 26, 2009	September 28, 2009	1, 2, 3, 4, 5
Exam 2	Oct 24, 2009	Oct 26, 2009	6, 7, 8, 9, 10
Exam 3	Nov 28, 2009	Nov 30, 2009	11, 12, 13, 14
Final Exam	December, 2009(TBA)	December, 2009	6, 9, 10, 12, 14, 15

*Uploading will be done in the morning of the starting date

**Due by 10pm of the due date (CST)

NOTE THE FOLLOWING

1. Feel free to ask questions through email or other online tools. In the discussion board you can also try to answer others' questions. But you are expected to maintain etiquette and decency in your responses.
2. This syllabus is tentative for the semester. It is meant to be a guide. Certain topics may be stressed more or less than indicated in the text books and, depending on class progress, certain topics may be omitted.
3. Assignments will be given on a regular basis. You will be given adequate time for answering them.
4. Missed examination: A missed assignment or mid-term examination will be given Zero score in total. A missed Final will result F.

5. The assignments listed are tentative for the semester. It is meant to be a guide. Certain topics may be stressed more or less than indicated in the text and depending on class progress, certain topics may be omitted.
6. Power point Slides and solutions to text problems for the course will be up loaded gradually as required.
7. The midterm exam date indicated on the course syllabus is approximate. You will be informed, at least one week before the exam.
8. Missed examination: Inform instructor if midterm or final exam are to be missed. Since I give two days for each test, I don't expect anyone to miss a test.
9. Students are expected to:

   a. Read text assignments as scheduled.

   b. Work the designated homework problems by the due date. (Note: Answers to odd questions may be found in back of text).

10: Demeanor: "All students enrolled at the university shall follow tenets of common decency and acceptable behavior conducive to a positive learning environment". See Students Guide Book.

11. Attendance Policy: This is online course, so no class attendance. But assignments and tests have corresponding due dates.

12. Special Needs: "Request from students with disabilities for reasonable accommodations must go through the academic support committee. For more information, please contact the office of Advisement Services, BA 314, 903 – 886 – 5133.

Schedule of Assignments:

The schedule will depend on class progress; chapter assignments and tests may be altered as the class progresses. Students should read chapters and do as many of the designated homework problems as possible and be familiar with the chapter summaries and key terms.

Text Assignment	Designated Homework Problems	Date (week of)	Chapter Goals
Chapter 1 Introduction to Business Statistics	TBA	Aug 31	1.Define inferential and descriptive statistics. 2.Differentiate between a quantitative and a qualitative variable. 3. Know the four levels of measurement – nominal, ordinal, interval, and ratio.
Chapter 2 Descriptive Statistics: Tabular and Graphical Methods	TBA	Aug 31	1. Construct a frequency distribution. 2. Determine the class midpoints, relative frequencies, and cumulative frequencies of a frequency distribution. 3. Construct a histogram, a frequency polygon, an ogive, and a pie chart.
Chapter 3 Descriptive Statistics: Numerical Methods	TBA	Sep 7	1. Define the mean, mode, and median. 2. Explain the characteristics of the mean, mode, and median. 3. Calculate the mean, mode and median for both grouped and ungrouped data. 4. Define the range, mean deviation, variance, and the standard deviation. 5. Explain the characteristics of the range, mean deviation, variance, and the standard deviation. 6. Calculate the range, mean deviation, variance, and the standard deviation for grouped and ungrouped data. 7. Define Skewness and Kurtosis. 8. Define and calculate the coefficient of variation.

Chapter 4 Probability	TBA	Sep 7	1. Define probability. 2. Define marginal, conditional, and joint probabilities. 3. Use the special and general rules of multiplication and addition in probability computation. 4. Calculate marginal, conditional, and joint probabilities.
Chapter 5 Discrete Random Variables	TBA	Sep 14	1. Define probability distribution and random variable. 2. Differentiate between a discrete and a continuous variable. 3 Calculate the mean, variance, and standard deviation of a discrete distribution. 4. Describe the characteristics and compute probabilities using the binomial probability distribution – use of tables. 5. Calculate the mean variance and standard deviation of a binomial distribution. 6. Describe the characteristics and compute probabilities using the Poisson distribution – use of tables.
Chapter 6 Continuous Random Variables	TBA	Sep 21	1. Describe the characteristics of and compute probabilities involving the normal distribution – use of tables. 2. Use the normal distribution as an approximation of the binomial distribution.
Chapter 7 Sampling Distributions (Section 1.5)	TBA	Sep 28	1. Describe various sampling techniques. 2. Explain the Central Limit Theorem. 3. Explain sampling error. 4. Describe the sampling distribution of means. 5. Define the standard error of the mean.
Chapter 8 Confidence Intervals	TBA	Oct 5	1. Calculate confidence intervals for sample means and sample proportions. 2. Describe the characteristics of Student's t distribution. 3. Use the Student's t probability table to calculate confidence interval

Text Assignment	Designated Homework Problems	Date (week of)	Chapter Goals
Chapter 9 Hypothesis Testing	TBA	Oct 12	1. Identify Type I and Type II errors. 2. Conduct a test of hypothesis about a population mean and a population proportion. 3. Conduct the test of hypothesis using one and two tail tests. 4. Conduct the test of hypothesis regarding one population mean with a small sample.
Chapter 10 Statistical Inferences Based on Two Samples	TBA	Oct 26 and Nov 2	1. Conduct a test of hypothesis about the difference between two population means involving large and small sample sizes and two population proportions. 2. Conduct the test of hypothesis regarding the difference in means of two independent samples.
Chapter 11 Experimental Design and Analysis of Variance	TBA	Nov 9	1. Understand the differences between various experiment designs and when to use them. 2. Compute and interpret the results of a one-way ANOVA. 3. Compute and interpret the results of a random block design. 4. Compute and interpret the results of a two-way ANOVA.
Chapter 12 Ch-square Tests	TBA	Nov 9	1. Understand and interpret interaction. 2. Understand the chi-square goodness-of-fit test and how to use it. 3. Analyze data by using the chi-square test of independence.
Chapter 13 Simple Linear Regression Analysis	TBA	Nov 16	1. Describe the relationship between an independent variable and a dependent variable.

(sections 2.6 and 3.4)			2. Calculate and interpret the coefficient of correlation, the coefficient of determination and the standard error of the estimate. 3. Calculate the least squares regression line and interpret the slope and intercept values. 4. Test the slope of the line for statistical significance. 5. Construct and interpret a confidence interval and prediction interval for the mean and an individual value of the dependent variable.
Chapter 14 Multiple Regression	TBA	Nov 23	1. Describe the relationship between two or more independent variables and the dependent variable using a multiple regression equation. 2. Compute and interpret the multiple standard error of the estimate and the coefficient of determination. 3. Conduct a test of hypothesis to determine if any of the set of regression coefficients differs from zero.
Chapter 15 Model Building and Model Diagnostics	TBA	Nov 30	1. Develop models to represent non-linear relationships
Final Exam	**TBA**	Decmber	