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Course Description

Scope, nature, tools, language, and interpretation of business statistics. Descriptive statistics; graphical and numerical representation of information; measures of location, dispersion, position, and dependence; exploratory data analysis. Elementary probability theory, discrete and continuous probability models. Inferential statistics, point and interval estimation, tests of statistical hypotheses, regression analysis; and use of statistical computer packages (WebStat, Excel, R).

Required Textbook


Homework: There will be several homework problem sets given in most class periods.

Examinations: One midterm exam and one final project will be given. No makeup exam will be given. The midterm exam will be closed-book and closed notes. However, you may use one page formula sheet.

Grading

Grades for the course will be determined using the following weights for each component of the course:

Midterm Exam 100 pts.
Final Exam and Project 200 pts.
Homework 60 pts.
Attendance 40 pts.
TOTAL 400 pts.

Course Coverage Schedule

Week 1 (July 2th – July 5th, 2013)

Chapter 1: What is Statistics?
1.2. Statistical Applications in Business.
1.3. Statistics and the Computer.

Chapter 2: Graphical Descriptive Techniques I.
2.1. Types of Data and Information.
2.2. Describing a Set of Nominal Data.
2.3. Describing the Relationship between Two Nominal Variables and Comparing Two or More Nominal Data Sets.

Chapter 3: Graphical Descriptive Techniques II.
3.1. Graphical Techniques to Describe a Set of Interval Data.
3.2. Describing Time-Series Data.
3.3. Describing the Relationship between Two Interval Variables.

Chapter 4: Numerical Descriptive Techniques.
4.1. Measures of Central Location.
4.2. Measures of Variability.
4.3. Measures of Relative Standing and Box Plots.
4.4. Measures of Linear Relationship.

Week 2 (July 8th – July 12th, 2013)

Chapter 5: Data Collection and Sampling.
5.1. Methods of Collecting Data.
5.2. Sampling
5.3. Sampling Plans.
5.4. Sampling and Nonsampling Errors.

Chapter 6: Probability.
6.1. Assigning Probability to Events.
6.4. Bayes’ Law.
6.5. Identifying the Correct Method.

Chapter 7: Random Variables and Discrete Probability Distributions.
7.1. Random Variables and Probability Distributions.
7.2. Bivariate Distributions.
7.3. (Optional) APPLICATIONS IN FINANCE: Investment Portfolio Diversification and Asset Allocation.
7.4. Binomial Distribution.
7.5. Poisson Distribution.

Chapter 8: Continuous Probability Distributions.
8.2. Normal Distribution.
8.3. (Optional) Exponential Distribution.
8.4. Other Continuous Distributions.

Midterm Exam (July 12th, 2013)

Week 3 (July 15th – July 19th, 2013)

Chapter 9: Sampling Distributions.
9.1. Sampling Distribution of the Mean.
9.2. Sampling Distribution of a Proportion.
9.4. From Here to Inference.

Chapter 10: Introduction to Estimation.
10.2. Estimating the Population Mean when the Population Standard Deviation is Known.
10.3. Selecting the Sample Size.

Chapter 11: Introduction to Hypothesis Testing.
11.2. Testing the Population Mean when the Population Standard Deviation is Known.
11.3. Calculating the Probability of a Type II Error.
Chapter 12: Inference about One Population.
12.1. Inference about a population Mean when the Standard Deviation is Unknown.
12.2. Inference about a Population Variance.
12.3. Inference about a Population Proportion.

Week 4 (July 22th – July 26th, 2013)

Chapter 13: Inference about Two Populations.
13.1. Inference about the Difference between Two Means: Independent samples.
13.2. Observational and Experimental Data.
13.3. Inference about the Difference between Two Means: Matched Pairs Experiment.
13.4. Inference about the Ratio of Two Variances.
13.5. Inference about the Difference between Two Population Proportions.

Chapter 14: Analysis of Variance.
14.2. Multiple Comparisons.
14.3. Analysis of Variance Experimental Designs.
14.4. Randomized Blocks (Two Way) Analysis of Variance.
14.5. Two-Factor Analysis of Variance.

Chapter 15: Chi-Squared Tests.
15.1. Chi-Squared Goodness-of-Fit Test.
15.2. Chi-Squared Test of a Contingency Table.
15.3. Summary of Tests on Nominal Data.

Final Exam and Final Project (July 26th, 2013)