

**STAT 251 - Statistical Inference for Management I**

Fall 2007

**1. Catalog Description**

**STAT 251 Statistical Inference for Management I (4) GE B1**

Descriptive statistics. Probability and counting rules. Random variables and probability distributions. Sampling distributions. Large sample point and interval estimation of population parameters. Large sample hypothesis tests for population means and proportions. 4 lectures. Prerequisite: Passing score on pre-calculus MAPE or equivalent.

**2. Required Background and/or Experience**

Passing score on pre-calculus MAPE, or Math 221 or equivalent

**3. Expected Outcomes**

The student should be able to:

- a. calculate and interpret various descriptive statistics;
- b. understand probability concepts and apply probability rules;
- c. use elementary counting techniques;
- d. apply commonly used probability distributions;
- e. calculate and interpret point and interval estimates of the common parameters;
- f. formulate various decision problems in terms of hypotheses tests;
- g. understand Type I and Type II errors in hypotheses tests; and
- h. conduct large-sample tests of hypotheses about various parameters.

**4. Text and References**

**Text:** Groebner, D.F., *et al*, Business Statistics A Decision-Making Approach, 7<sup>th</sup> ed., Prentice Hall, Upper Saddle River, New Jersey, 2007.

**References:** Anderson, D.R., *et al*, *Statistics for Business and Economics*, 10<sup>th</sup> ed., South-Western College Publishing, Cincinnati, OH, 2005.

McClave, J.T., *et al*, *Statistics for Business and Economics*, 10<sup>th</sup> ed., Prentice-Hall, Upper Saddle River, NJ, 2008.

**5. Minimum Student Materials**

None

**6. Minimum University Facilities**

Chalkboards for class use. Overhead projectors.

**7. Method of Evaluating Outcome**

Problem assignments, scheduled tests, and final examination.

**8. Expanded Description of Content and Method**

<u>CONTENT</u>	<u>NUMBER OF LECTURES</u>
<b>A. Introduction and Descriptive Statistics (Chapters 1-3)</b>	
1. The Where, Why, and How of Data Collection (Ch. 1.1 – 1.4)	*
2. Graphical Methods for Data Description (2.1-2.2)	1.5
3. Numerical Descriptive Measures (3.1 – 3.3)	2.5
<b>B. Probability and Counting Rules (Chapter 4)</b>	
1. Events, sample spaces, and Probability (4.1)	1
2. Compound events and event relationships (4.2)	1.5
3. Additive Rule and Mutually Exclusive Events (4.2)	2.5
4. Conditional Probability (4.2)	1
5. Multiplicative Rule and Independence (4.2)	2
<b>C. Random Variables and Probability Distributions (Chapter 5)</b>	
1. Discrete random variables and distributions (4.1)	2
2. Expected values for discrete random variables (4.2)	1.0
3. The binomial distribution (4.3)	1.5
<b>D. Continuous Probability Models (Chapter 6)</b>	
1. Continuous random variables (6.1)	0.5
2. The normal distribution (6.1)	3.0
<b>E. Sampling Distributions (Chapter 7)</b>	3.5
<b>F. Single Sample Estimation with Confidence Intervals (Chapter 8)</b>	
1. Confidence interval for a population mean, $\sigma$ known (8.1)	1.5
2. Confidence interval for a population mean, $\sigma$ unknown (8.1)	2
3. Sample size determination (8.2)	1.0
3. Large-sample confidence interval for a population proportion (8.3)	1.5
<b>G. Single Sample Tests of Hypotheses (Chapter 9)</b>	
1. The elements of a test of hypothesis (9.1)	1.5
2. Hypothesis test for a population mean, $\sigma$ known (9.1)	1.5
3. P-values (9.1)	1.5
4. Hypothesis test for a population mean, $\sigma$ unknown (9.1)	
1.5 5. Large-sample hypothesis test for a population proportion (9.2)	
1.5	
	<b>TOTAL 37</b>

**METHOD**

Largely lecture with chalkboard and transparency illustration of methods and problems, class discussion and supervised work.

**9. Method of Evaluating Outcome**

Daily problem assignments, scheduled tests and a final examination.