Course Outline

Department of Mathematics and Statistics

Minnesota State University, Mankato

Stat 154 Elementary Statistics (4 semester hours)

Course Description:

An introduction to statistical concepts and methods that is applicable to all disciplines. Topics include descriptive measures of data, probability and probability distributions, statistical inference, tests of hypotheses, confidence intervals, correlation, linear regression, and analysis of variance. The use of statistical software will be emphasized.

Prerequisites: Satisfy Placement Table in this section, or MATH 098 with grade of P.

Learning Outcomes:

Students will be able to:

1. Construct graphical tools in summarizing data.
2. Apply numerical and graphical techniques in summarizing data.
3. Acquire an understanding of probability and the notion of sample-to-sample variation.
4. Construct confidence intervals for selected parameters.
5. Determine sample sizes for a study with specific goals.
6. Compare two or more samples.
7. Justify a claim using statistical significance.
8. Fit a simple linear regression model and make some preliminary inferences.

Content Outline:

1. Descriptive statistics
2. Elementary probability
3. Distribution theory
4. Population, samples, random variables
5. Binomial and normal distributions
6. Central limit theorem
7. Statistical inference
8. Confidence intervals
9. Tests of hypotheses
10. Regression and correlation
11. Chi-square tests
12. Analysis of Variance

Textbook/Related Readings/Materials:

Triola, Essentials of Statistics
Rahman, Sanjel, and Wu, Statistics Introduction
SPSS, MINITAB, Scientific Calculator (Computational Tools)