I. **Course Title:** Psychological Statistics  
**Course Number:** PSY 766  
**Credits:** 3  
**Date of Revision:** May 2005

II. **Course Prerequisite(s):** Successful completion of an undergraduate course in basic statistics.

III. **Catalogue Description:**  
This course is designed to give students the basic information they need to interpret the statistics that are used most frequently in research and application in psychology. The focus is on understanding and interpreting basic descriptive and inferential statistics including univariate and multivariate analyses. In addition, it will cover the strengths and limitations of applied statistical techniques in application and research. The course is designed to prepare students for graduate courses in testing, research methods, and research interpretation as well as to provide them with the statistical skills required to solve problems in an educational setting.

IV. **Competencies Addressed:**  
**Research** – systematic problem-finding and problem-solving skills in both applied and formal research settings. This would include hypothesis testing, data analysis, drawing conclusions, and the ability to evaluate and critique existing professional research.

V. **Course Objectives:**  
At the conclusion of this course students will be able to…  

A. Interpret basic descriptive statistics including measures of central tendency and dispersion.  

B. Understand the normal curve and compute and interpret standard scores and percentiles.  

C. Understand the basic rules of probability as they apply to sampling and statistical inference.  

D. Understand and to apply the principles of hypothesis testing.
V. Course Objectives (continued):

E. Interpret basic inferential statistics including:
   1. Parametric and non-parametric measures of association including the Pearson correlation coefficient, Spearman Rho, and Chi-Square.
   2. Parametric estimates of the differences between groups including z-test, t-test, analysis of variance (simple, factorial, repeated measures) and analysis of covariance.

F. Understand the basic principles of multivariate statistics including:
   1. Multiple regression.
   2. Factor analysis.
   4. Discriminant Analysis
   5. Meta-Analysis

G. Use computer facilities for tabulating and computing basic statistical problems using a packaged statistical program such as SPSS. This will include
   1. Basic data entry.
   2. Basic descriptive statistics.
   3. Basic inferential statistics including t-tests and one-way ANOVA.
   4. Basic correlational statistics and multiple regression.
   5. Multivariate analysis including MANOVA and factor analysis

VI. Course Outline:

A. Introduction to statistics and measurement including the counting, measuring, frequency distributions, and graphs.

B. Introduction to computer software concepts.
VI. **Course Outline (continued):**

C. **Descriptive statistics.**
   1. Measures of central tendency.
   3. The normal curve and standard scores.

D. **Inferential statistics.**
   1. Probability and sampling distributions.
   2. Hypothesis testing.
   3. Parametric measures of the differences between means.
      a. t-tests.
      b. One-way, between groups analysis of variance
      c. One-way, repeated measures analysis of variance
      d. Two-way analysis of variance
   4. Non-parametric measures.
      a. Chi-square.
      b. Rank-ordering statistics.
   5. Introduction to multi-variate statistics.
      a. Multiple regression.
      b. Factor analysis
      c. Multi-variate analysis of variance
      d. Discriminant Analysis
      e. Meta-Analysis

VII. **Teaching Methodology:**

The major teaching methodology will be lecture supplemented by numerous in-class exercises, computer work, and discussion of published research articles.

Students will have to have access to the Psychology Department computer laboratory and a basic statistical program such as SPSS.
VIII. Evaluation of the Student:

Students will be assessed on their knowledge of basic statistical concepts as outlined in the course objectives as well as their performance on assignments using the computer. In addition, they will be assessed on their ability to interpret information presented in statistical format. Finally, they will be assessed on their ability to recognize both appropriate and inappropriate applications of statistical techniques. Assessment will consist of the following techniques:

A. In-class tests and quizzes.
B. Homework assignments.
C. Take-home tests.
D. Computer assignments.

IX. Bibliography:


IX. Bibliography (continued):