

Course Outline for: PSYC 2100 Statistics for the Behavioral Sciences**A. Course Description**

1. Number of credits: 4
2. Lecture hours per week: 4
3. Prerequisites: PSYC 1100 (C or higher) and MATH 1080 (C or higher) or MATH 1090 (C or higher) or MATH 1100 (C or higher)
4. Corequisites: None
5. MnTC Goals: Goal 5 – History and the Social and Behavioral Sciences

This course introduces statistical analysis and research designs used in the behavioral sciences. In it, students use statistical software (e.g., SPSS) to conduct descriptive and inferential data analyses. They choose and apply statistical procedures to help answer psychological and behavioral scientific research questions, and gain an introduction to commonly used research methods. In order to see how statistical methods and findings are reported in behavioral science research, students read, interpret, evaluate, and write APA-style Results sections.

B. Date last reviewed/updated: January 2022**C. Outline of Major Content Areas**

1. Central tendency and variability
2. Research design and methods
3. Reliability and validity
4. Basics of inferential statistics: Z scores, the normal curve, sample versus population, and probability
5. Hypothesis testing
6. Making sense of statistical significance: effect size, confidence intervals, and statistical power
7. Choosing appropriate statistics
8. Using SPSS or another appropriate statistical package, R, or other statistics program
9. Visually accurate representations of data and research results
10. Reporting results in APA format
11. The t-test: One and two samples (between and within)
12. Introduction to analysis of variance
13. Factorial analysis of variance
14. Correlation
15. Regression

16. Chi-square tests

D. Course Learning Outcomes

Upon successful completion of this course, the student will be able to:

1. Demonstrate an understanding of the mathematics and logic behind selecting and applying statistical procedures appropriate for a given hypothesis, scale of measurement, and experimental design. (5a, 5d, 2a, 2b, 2c)
2. Perform and describe the statistical procedures commonly used by social scientists including their respective advantages and disadvantages. (5a, 5b, 5d, 2a, 2c) These include:
 - a. Creating a visual display of data (e.g., bar chart, histogram)
 - b. Measures of central tendency, variability, and frequency distributions.
 - c. Correlational and regression analyses.
 - d. Inferential statistical procedures, including t-tests, ANOVAs, multiple comparison tests, confidence intervals, and effect sizes.
 - e. Nonparametric tests (e.g., chi-square).
3. Read, interpret, and summarize basic statistical conclusions from psychological and behavioral science sources accurately and critically evaluate the statistical presentations of others. (5a, 5b, 5d, 2b, 2c)
4. Interpret statistical findings and graphs in the context of their level of statistical significance, confidence intervals, effect sizes, and underlying assumptions, and explain these findings using common language and conventions of the American Psychological Association. (5a, 5d, 2b, 2c)
5. Use SPSS or another statistical package to build data sets, run univariate analyses, and interpret and display results. (5a, 5d, 2a, 2b, 2c)
6. Understand problems specific to research design and statistics in social sciences as well as explain corrections to be taken in research design and statistical analysis for these problems. (5a, 5b, 5d, 2a, 2b, 2c)

E. Methods for Assessing Student Learning

Individual instructors may devise their own methods of assessing student learning. Possible methods include: objective multiple choice exams, classroom contribution, and written material (homework, projects, and papers) as appropriate.

F. Special Information

None