

**PSYC-2510 STATISTICAL PRINCIPLES FOR PSYCHOLOGY 4 CREDITS****SYLLABUS**

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**CATALOG DESCRIPTION**

This course covers introductory-level topics in statistics that are applicable to psychological research. Both descriptive and inferential statistics are covered. Topics include applying statistical formulas to psychological data and interpreting the results of statistical analyses.

Formerly PSYC-210

Prerequisites: MATH 096, PSYC-1110 (RDNG-099 OR RDNG-113) and ENGL-099 or appropriate Reading and English Accuplacer scores.

Semester Offered: All

***COMMON STUDENT LEARNING OUTCOMES***

*Upon successful completion of San Juan College programs and degrees, the student will demonstrate competency in...*

**BROAD AND SPECIALIZED LEARNING**

Students will actively and independently acquire, apply, and adapt skills and knowledge with an awareness of global contexts.

**CRITICAL THINKING**

Students will think analytically and creatively to explore ideas, make connections, draw conclusions and solve problems.

**CULTURAL AND CIVIC ENGAGEMENT**

Students will act purposefully, reflectively, and ethically in diverse and complex environments.

**EFFECTIVE COMMUNICATION**

Students will exchange ideas and information with clarity in multiple contexts.

**INFORMATION LITERACY**

Students will be able to recognize when information is needed and have the ability to locate, evaluate, and use it effectively.

**INTEGRATING TECHNOLOGIES**

Students will demonstrate fluency in the application and use of technologies in multiple contexts.

Student work from this class may be randomly selected and used anonymously for assessment of course, program, and/or institutional learning outcomes. For more information, please refer to the Dean of the appropriate School.

**COURSE LEARNING OUTCOMES**

*Upon successful completion of the course, the student will be able to...*

1. Demonstrate an understanding of the differences between descriptive and inferential statistics.
2. Demonstrate an understanding of the differences between parametric and nonparametric statistics
3. Develop the ability to gather information from multiple sources and synthesize this information.
4. Develop skills to critically evaluate studies which incorporate statistics
5. Compute the different statistical tests manually and with a calculator.
6. Graph different types of data manually.
7. Graph data, compute descriptive statistics, t-tests and ANOVA using SPSS.

#### SPECIFIC LEARNING OUTCOMES

1. Demonstrate an understanding of the differences between descriptive and inferential statistics.
  - a. Define descriptive and inferential statistics.
  - b. Distinguish between descriptive and inferential statistics and give examples
2. Demonstrate an understanding of the differences between parametric and nonparametric statistics
  - a. Define population and a sample.
  - b. Distinguish between a population and a sample
  - c. Define statistics and parameters.
  - d. Distinguish between a parameter and a statistic and give examples
  - e. Classify data with respect to the four levels of measurement: nominal, ordinal, interval and ratio
3. Develop the ability to gather information from multiple sources and synthesize this information.
4. Develop skills to critically evaluate studies which incorporate statistics
5. Compute the different statistical tests manually and with a calculator and
  - a. explain results
  - b. Compute and explain measures of central tendency and find the mean, median and mode of a sample and a population
  - c. Compute and explain variability and find the range, variance and standard deviation of a sample
  - d. Explain how to interpret percentiles
  - e. Calculate and interpret standard scores (z-scores and t-scores)
  - f. Discuss hypothesis testing and how to state the null and alternative hypothesis
  - g. Interpret the level of significance of a hypothesis test (p-values)
  - h. Identify type I and type II errors
  - i. Perform a one and two sampled t-test and determine significance
  - j. Explain an F-test, calculate and interpret a one-way ANOVA
  - k. Calculate and interpret a two-way ANOVA
  - l. Explain regression and how to find the correlation coefficient
  - m. Predict y-values using regression the equation
  - n. Explain the difference between parametric and non-parametric statistics
  - o. Calculate and interpret non-parametric tests such as the Wilcoxon rank test, Spearman rank correlation, Kruskal-Wallis test, etc.
  - p. Explain simple and classical probability
  - q. Calculate permutations, combinations and binomial probability
6. Graph different types of data manually.
  - a. Construct a frequency distribution including midpoints, relative frequencies
  - b. and cumulative frequencies
  - c. Construct frequency histograms and polygons
  - d. Graph and interpret data sets
7. Graph data, compute descriptive statistics, t-tests and ANOVA using SPSS.
8. Use SPSS to graph data, to compute descriptive statistics, t-tests and ANOVAs