

CALIFORNIA POLYTECHNIC STATE UNIVERSITY
San Luis Obispo, California

STAT 511 – Statistical Methods**Fall 2015****1. Catalog Description****STAT 511 Statistical Methods**

Statistical methods in research for graduate students not majoring in mathematical sciences. Probability distributions, confidence intervals, hypothesis testing, contingency tables, linear regression and correlation, multiple regression, analysis of variance. Substantial use of statistical software. 4 seminars. Prerequisite: Graduate standing and intermediate algebra or equivalent.

2. Required Background and/or Experience

Graduate standing and intermediate algebra or equivalent.

3. Expected Outcomes

The student should be able to:

- a. Use graphical and numerical descriptive statistics to summarize data.
- b. Use confidence intervals to estimate parameters and interpret the results.
- c. Perform hypothesis tests and understand their results.
- d. Design experiments and analyze their outcomes.
- e. Analyze contingency tables.
- f. Understand the basic procedures of regression and correlation.

4. Text and References**Possible Texts:**

Samuels, M., Witmer, J., and Schaffner, A., *Statistics for the Life Sciences*, Pearson, 6th Edition, 2014.
Sanders and Smidt, *Statistics: A First Course*, McGraw-Hill, 6th Edition 2001.

5. Minimum Student Materials

None.

6. Minimum University Facilities

Classroom with chalkboards, audiovisual equipment, and computer access.

7. Expanded Description of Content**Content**

a. Introduction to MINITAB.....	1
b. Sampling and basic design concepts.....	4
c. Descriptive statistics.....	3
d. Probability distributions.....	2
e. Introduction of confidence intervals and hypothesis tests on one population mean.....	4
f. Inference on the difference between two population means.....	3
g. Chi square tests for one- and two-way tables.....	3
h. Linear regression and correlation.....	4
i. Multiple regression.....	3
j. One-way analysis of variance including multiple comparisons.....	5
k. Randomized block design and factorial experiments.....	4

TOTAL 36

8. Method of Evaluating Outcomes

Periodic assignments (e.g., problem sets, team-based activities, projects) may be combined with in-class examinations (e.g., quizzes, midterms, final exam).