

Statistics 217

Introduction to Statistics II

Estimation of population parameters; confidence intervals for means; choice of sample size. Tests of hypotheses including 2-sample tests and paired comparisons. The Chi-squared tests for association and goodness-of-fit. Regression and correlation; variance estimates; tests for regression and correlation coefficients. Non-parametric methods and associated tests. Time series, forecasting.

Course Hours: H(3-1-1T)

Prerequisite(s): [Statistics 213](#) or consent of the Division.

Notes: See the statements regarding credit which appear at the beginning of the Statistics course listings.

Syllabus

<u>Topics</u>	<u>Number of hours</u>
<p>ESTIMATION Point and interval estimation. Unbiased estimators. Confidence intervals for means, proportions, and their differences. Required sample size for given interval width. Optional: Notched Box-and-whisker plots.</p>	4
<p>HYPOTHESIS TESTING: ONE SAMPLE Introduction to hypothesis testing. Acceptance and rejection regions. Type I and Type II errors and their probabilities. Hypotheses about means and proportions including Student T-test. Power function of a test involving the mean and proportion. Hypothesis testing and confidence interval for the variance, Chi-squared distribution.</p>	8
<p>HYPOTHESIS TESTING: TWO SAMPLES Distribution of the difference of two sample means and proportions. Comparisons of two means and two proportions including paired Student T-test. Optional: Levene's test or Fisher's distribution and comparison of two variances.</p>	5
<p>CHI-SQUARED TESTS Goodness of fit tests to uniform, binomial, Poisson and Normal distributions. Tests of homogeneity, independence and contingency tables.</p>	4
<p>ANALYSIS OF VARIANCE One way analysis of variance including F-test. Two way analysis of variance with one observation per cell.</p>	3
<p>LINEAR REGRESSION Linear regression model, scattergrams, Least Squares Method. Estimation of the intercept and slope, confidence intervals and tests. Regression ANOVA and the F-test. Coefficients of correlation and determination. Predictions and their confidence intervals. Multivariate and polynomial regression.</p>	7
<p>NON-PARAMETRIC TESTS Selection of non-parametric tests from the following list: Sign test, Mann-Whitney test, Wilcoxon signed-ranks test, Kruskal-Wallis test, Kolmogorov-Smirnov test.</p>	5
TOTAL HOURS	36
