STATISTICS 217
"STATISTICAL METHODS II"

Calendar Description: H(3-1-1T)
>   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.

Prerequisite: Statistics 213 or consent of the Division.

Syllabus

Topics	Number of hours
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.	4
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.	8
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.	5
CHI-SQUARED TESTS Goodness of fit tests to uniform, binomial, Poisson and Normal distributions. Tests of homogeneity, independence and contingency tables.	4
ANALYSIS OF VARIANCE One way analysis of variance including F-test. Two way analysis of variance with one observation per cell.	3
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.	7
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.	5
TOTAL HOURS	36

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