A. Course Description

Credits: 4

Prerequisites: STAT 201 Statistics I or equivalent. Familiar with statistical software.

Lab Hours/ Weeks: Corequisites: None

Lecture Hours/ Week:

MnTC Goals: Goal 04 - Mathematical/Logical Reasoning, Goal LS - Upper Division Liberal Studies

This course covers introductory and intermediate ideas of the analysis of variance (ANOVA) method of statistical analysis. The course builds on the ideas of hypothesis testing learned in STAT 201 Statistics I. The focus is on learning new statistical skills and concepts for real-world applications. Students will use statistical software to do the analyses. Topics include one-factor ANOVA models, randomized block models, two-factor ANOVA models, repeated-measures designs, random and mixed effects, analysis of covariance, principle component analysis, and cluster analysis. Completion of STAT 201 Statistics I is a prerequisite.

B. Course Effective Dates: 05/06/2018 - Present

C. Outline of Major Content Areas:

See Course Description for major content areas.

D. Learning Outcomes (General)

1. Communicate understanding of analysis results through clearly written conclusions summarizing the results of the statistical models when applied to specified data sets.
2. Demonstrate the ability to appropriately select among different ANOVA models for hypothesis testing based on the experimental design in the context of answering questions about representative real-world problems.
3. Understand and learn to interpret a more advanced set of hypothesis testing techniques (than are covered in STAT 201 - Statistics I) such as one and two factor ANOVA models, multiple comparisons, nonparametric ANOVA, randomized block ANOVA and analyzing categorical data with ANOVA.
5. Understand the role of experimental design in controlling for variation among experimental outcomes.
6. Analyze multivariate data using principle component analysis and cluster analysis.

E. Learning Outcomes (MN Transfer Curriculum)

Goal 04 - Mathematical/Logical Reasoning
1. Apply higher-order problem-solving and/or modeling strategies.
2. Clearly express mathematical/logical ideas in writing.
3. Illustrate historical and contemporary applications of mathematical/logical systems.
4. Explain what constitutes a valid mathematical/logical argument (proof).

Goal LS - Upper Division Liberal Studies
None

G. Special Information

None