Advanced Multivariate Statistical Methods

Douglas Steinley

This course will focus on multivariate data concepts, methods, and analyses that students may need in their own research or may encounter when reading journal articles. This course will cover both descriptive and inferential techniques for analyzing multivariate data with the primary objective being two-fold: (1) relaying the underlying theories, appropriate applications, and limitations of various procedures; (2) using statistical software packages to properly analyze and interpret results.

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Prerequisites: Multiple regression and Analysis of Variance

Required Texts: Rencher, A. Methods of Multivariate Analysis

Readings: In addition to the text, there will be some required readings.

Assignments: There will be 6-8 assignments, many will require the use of statistical software
Overview and Review of Matrix Algebra

Geometry of Multivariate Statistics

Displaying Multivariate Data

Multivariate Normal Distribution

Principal Components

Factor Analysis

Multidimensional Scaling

Cluster Analysis

Correspondence Analysis

Biplots

Multivariate Regression

Multivariate Analysis of Variance

 Canonical Correlation

Discriminant Analysis