ST640: Design and Linear Modeling I
Outline
Jennifer A. Hoeting
March 9, 2000

I. Course overview

II. Review of matrix theory

III. Multivariate distribution theory
   A. Multivariate normal distribution
   B. Distribution of quadratic forms
   C. Independence of linear and quadratic forms
   D. Other noncentral distributions

IV. Standard linear model: prediction, estimation and inference
   A. Prediction
   B. Estimation of parameters
      1. Estimation via least squares
      2. Unconstrained Optimization (estimation via maximum likelihood)
      3. Constrained Optimization
      4. BLUE
      5. Reparameterization
      6. Partitioning the model
   C. Inference
      1. Tests of linear hypotheses
      2. Confidence Intervals
      3. Simultaneous Inference
         a. LSD
         b. Bonferroni
         c. Scheffé
         d. Tukey
         e. Multivariate t
         f. Summary

V. Regression Models

VI. Analysis of Variance Models