

Instructor: Dr. Joan Hu

Prerequisite:

STAT 285 and MATH 251

Textbook:

Applied Linear Statistical Models (w/student CD) (5th Edition) by Kutner, Nachtsheim, Neter, Li. Publisher: McGraw-Hill/Irwin

Calendar Description:

Theory and application of linear regression. Normal distribution theory. Hypothesis tests and confidence intervals. Model selection. Model diagnostics. Introduction to weighted least squares and generalized linear models. **Quantitative**

Outline:

- 1. Linear models: Definition, simple and multiple linear regression models, ANOVA models. Incorporating different types of predictor variables and their interactions in the model. Matrix notation.
- 2. Estimation methods: Least-squares, maximum likelihood. Algebraic and geometrical interpretations.
- 3. Properties of least-squares estimators: Mean, variance, and covariance of least-squares estimators. Expected value of residual sum of squares.
- 4. Diagnostic tools: Residual plots, multicollinearity, outliers, influential observations, goodness-of-fit tests.
- 5. **cetth/de**
- 9. Introduction to weighted least-squares and generalized linear models.

Grading Scheme:

Assignments (7-ish) 15% Midterms (2) 35% Final 50% The grading is subject to change

Students should be aware that they have certain rights to confidentiality concerning the return of course papers and the posting of marks. Please pay careful attention to the options discussed in class at the beginning of the semester. Students are reminded that Academic Honesty is a cornerstone of the acquisition of knowledge. Scholarly integrity is required of all members of the University. Please consult the General Guidelines of the calendar for more details.

Revised June 12, 2007