STAT 361 Applied Methods in Statistics I

Fall 2008

Instructor:

Devon Lin, Jeffery Hall 406, email: cdlin@mast.queensu.ca

Prerequisite:

A course in linear algebra; one of STAT 251, 269, 351, or 356; and one of STAT 261, 263, 264, 267, 367; or permission of the instructor.

Textbook:

Applied Regression Analysis, A Research Tool, Second Edition, by J. O. Rawlings, S. G. Pantula, and D. A. Dickey, Springer, 1998.

Lecture:

Slot 12, Monday 12:30-13:20, Wednesday 11:30-12:20, Thursday 13:30-12:20

Office Hours:

Wednesday 10:30-11:20, Thursday 14:30-15:30 or by appointment

Assignments:

There will be 5 homework assignments. These will be posted on the class web site; no paper copies will be handed out. Solutions to the assignments will be posted on the course web page.

Midterms:

is scheduled for Oct 9 and Nov 6 in class.

Grading Scheme:

Assignments 20% Midterms 30% Final 50%

Course Website:

http://www.mast.queensu.ca/∼cdlin/teaching361.htm

Outline:

- Review of simple linear regression: least square estimate, properties of estimates, analysis of variance, hypothesis testing, confidence intervals.
- Review of matrix.
- Multiple linear regression: the regression model in matrix form, estimation, properties of estimates, analysis of variance, quadratic forms, hypothesis testing, confidence regions, test for lack of fit based on the pure error sum of squares, variable selection.
- Regression diagnostics: problems in least square estimation, residuals analysis, outlier, influential points, collinearity, transformation.
- Special Cases: polynomial regression; class variables.
- Introduction to weighted least-squares and generalized linear models.