

STATISTICS 350-3
LINEAR MODELS IN APPLIED STATISTICS II

Summer 2002
DAY COURSE

Instructor: Madjid Amir

Prerequisites:

STAT 330 and MATH 251.

Textbook:

Supplementary Text - *Applied Linear Regression* by Sanford Weisberg, Wiley

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.

Outline:

1. Linear models. Matrix notation, examples of linear and non-linear models. Fitting linear models to data. Least squares. Geometrical interpretation of least squares.
2. Theoretical development of the behaviour of least squares: Matrix expectation, mean and variance of random vectors, singular and non-singular distributions, factorization theorem. Means, variances and covariances of least squares estimators. Standardized residuals, standardized coefficients. Eo