STATISTICS 350-3
LINEAR MODELS IN APPLIED STATISTICS II

Spring 2001
DAY COURSE

Instructor: Dr. J. GRAHAM

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, factoro76 di)36 d TJ25.2114 0 TD0.0018 Tc-0.0004 Tw[distrib4.7(u)1.1(i5.36n4.7(Jo4.7(nt5.3(d4.7(

cate observations, pure error sum of squares, test for lack of fit, near replicates.
e, likelihood ratio test for equality of variances, Bartlett's test. Lack of

aims of model, requirements of model, iterative procedures, difficulties with
on procedures: all possible subsets, best subset regression, forward, backward
endations.
east squares. Introduction to generalized linear models: transformation of
c or Poisson regression introduced.