

Math 564 – Applied Statistics

Course Description from Bulletin: Simple linear regression; normal error regression model; least squares estimation; statistical distribution of our sample estimates; confidence regions; prediction intervals; lack of fit tests; residual analysis; time series, analysis of variance and covariance. (3-0-3)

Enrollment: Elective for AM majors.

Textbook(s): Michael H. Kutner, John Neter, Chris J. Nachtsheim, William Wasserman, *Applied Linear Regression Models*, Irwin/McGraw-Hill, 4th edition, 2003, ISBN 0072386916.

Other required material: None

Prerequisites: MATH 332, MATH 475 and MATH 476

Objectives:

1. Students will first review basic probability, statistics and matrix algebra.
2. Students will learn how to construct linear models.
3. Students will learn the concepts of least squares.
4. Students will learn how to estimate our parameters in our model.
5. Students will learn the statistical distribution of these estimators.
6. Students will learn various techniques for obtaining confidence regions.
7. Students will learn prediction of a future observation.
8. Students will learn the Durbin-Watson test for autocorrelation.

Lecture schedule: 3 50 minute (or 2 75 minute) lectures per week

Course Outline:

	Hours
1. Linear regression with one predictor variable.	4
2. Inference in regression analysis.	5
3. Diagnostics and residual analysis.	3
4. Matrix approach to regression analysis.	7
5. Multivariate linear regression models.	8
6. Simultaneous inference.	5
7. Autocorrelation in time series.	4

Assessment:	Homework	10-20%
	Computer Programs/Projects	10-40%
	Quizzes	10-20%
	Exams	40-60%
	Final Exam	20-40%

Syllabus prepared by: André Adler

Date: 6/19/06