

Syllabus

Fall 2005

- Course:** Statistics 971, Advanced Statistical Modeling
- Instructor:** Steve Kachman
- Office:** 355B Hardin Hall
- Phone:** 472-7302
- Text Book:** *Generalized, Linear, and Mixed Models*, McCulloch and Searle
- Prerequisites:** Statistics 970
Matrix Algebra
Linear Models
Distributions
Experimental Design
Basics of Theory and Inference
SAS
- Homework:** Approximately once every other week
20% will be deducted for each day late.
- Exams:** Two exams, will be announced at least one week in advance
- Final Exam:** Tuesday, Dec 13 10:00-Noon
Revise travel plans accordingly.
- Conflicts:** Expected to take exams at the scheduled time
If an exam conflicts with an activity vital to your program,
please have your major advisor contact me well in advance.
I should be notified as soon as possible of any potential conflicts.
- Grading:** Exams 200 pts
Final 150 pts
Homework and Quizzes 100 pts
Grading will be on a straight 90, 80, 70, 60 percent basis.
Available at <http://my.unl.edu/>
- Web page:** <http://statistics.unl.edu/faculty/steve/971/2005/>

The objective of the course is to extend your repertoire of approaches towards modeling beyond the standard linear model based approaches. Towards this objective we will examine the various assumptions made in a standard analysis, examine our options when our assumptions are different, and examine our options when these assumptions are relaxed. Along the way we will not only look at the application of different analytical methods but, we will also look at the theory behind these methods.

Outline

1. Linear Models (A Review)
2. Generalized Linear Models
3. Mixed Models
 - (a) Fixed and Random
 - (b) BLUE and BLUP
 - (c) Variance Components
4. Repeated Measures
 - (a) MANOVA
 - (b) Structured Covariance Matrices
5. Generalized Linear Mixed Models
 - (a) Likelihood based
 - (b) Bayesian