

STA 7249
Section 7523

Generalized Linear Models

Spring, 2011

Course Information

Time: MWF 8:30 – 9:20 a.m. (period 2) **Location:** 230 FLO (Griffin-Floyd Hall)

Instructor: Dr. Brett Presnell

Office: 220 FLO

E-mail: presnell@stat.ufl.edu

Office Hours: See instructor's web page.

Phone: 273-2989

Web Page: <http://www.stat.ufl.edu/~presnell/>

Text: P. McCullagh and J. A. Nelder, *Generalized Linear Models, Second Edition*. Chapman & Hall/CRC, Boca Raton, 1989.

Course Web Page: <http://www.stat.ufl.edu/~presnell/Courses/sta7249-2011sp/>

Prerequisites: STA 6327 and STA 6208, or permission of instructor.

Course Content and Objectives

This course will focus on the theory and application of generalized linear models and related statistical topics. Questions on this material appear on the PhD qualifying exam in statistics.

In a generalized linear model (GLM), the response variable has a distribution in an exponential dispersion family and the mean response is related to covariates through a link function and a linear predictor. GLMs allow a unified theory for many of the models used in statistical practice, including normal theory regression and ANOVA models, loglinear models, logit and probit models for binary data, and models for gamma responses and survival data.

Grading

There will be two exams, a midterm and a final. The midterm is tentatively scheduled for Friday, March 4. The final exam will be held during the scheduled final exam period (26E: Tuesday, April 26, 5:30pm–7:30pm). Homework will also be assigned periodically and graded. Homework assignments may involve data analysis and computations requiring the use of a statistical package and/or programming language. The exams will each account for 1/3 of the course grade, and homework for the remaining 1/3.

Other References

Besides the course text, lectures will draw on material from published papers and other textbooks and monographs. The texts listed below are among those which consulted and where possible they have been placed on reserve for this course in the Science Library (and at least one of these books is available electronically through the library).

AGRESTI, A. (2002). *Categorical Data Analysis*. New York: Wiley, 2nd ed.

DIGGLE, P. J., HEAGERTY, P. J., LIANG, K.-Y. & ZEGER, S. L. (2002). *Analysis of Longitudinal Data*. Oxford: Oxford University Press, 2nd ed.

FAHRMEIR, L. & TUTZ, G. (2001). *Multivariate Statistical Modelling Based on Generalized Linear Models*. New York: Springer-Verlag, 2nd ed.

HASTIE, T. J. & TIBSHIRANI, R. J. (1990). *Generalized Additive Models*. New York: Chapman & Hall.

JIANG, J. (2007). *Linear and Generalized Linear Mixed Models and Their Applications*. New York: Springer.

LEE, Y., NELDER, J. A. & PAWITAN, Y. (2006). *Generalized Linear Models with Random Effects: Unified Analysis via H-likelihood*. Boca Raton: Chapman and Hall/CRC.

MADSEN, H. & THYREGOD, P. (2011). *Introduction to General and Generalized Linear Models*. Boca Raton: CRC Press.

MCCULLOCH, C. E., SEARLE, S. R. & NEUHAUS, J. M. (2008). *Generalized, Linear, and Mixed Models*. Hoboken, New Jersey: John Wiley & Sons, Inc., 2nd ed.

RUPPERT, D., WAND, M. P. & CARROLL, R. J. (2003). *Semiparametric Regression*. Cambridge University Press.