

STAT 890

Selected Topics: 851-Generalized Linear Models and Discrete Data Analysis

Spring 2012
Day Course

Students requiring accommodations as a result of disability must contact the Centre for Students with Disabilities 778-782-3112 or csdo@sfu.ca

Instructor: [Dr. Rachel Altman](#)

Prerequisite:

Statistics 830 and Statistics xxx [linear models] or permission of the instructor

Textbook:

Recommended:

1. *Generalized Linear Models, 2nd Edition*, by P. McCullagh and J.A. Nelder. Publisher: CRC Press.
2. *Categorical Data Analysis, 2nd Edition*, by Alan Agresti. Publisher: Wiley
3. *Extending the Linear Model with R: Generalized Linear, Mixed Effects and Nonparametric Regression Models*, by Julian Faraway. Publisher: CRC Press.

Calendar Description:

The theory and application of statistical methodology for analyzing non-normal responses. Special emphasis on contingency tables, logistic regression, and log-linear models. Other topics can include mixed-effects models and models for overdispersed data.

Outline:

1. Analysis of contingency tables
2. Generalized linear models (GLMs)
 - a. The exponential family
 - b. Link functions
 - c. Relationship to linear models
 - d. Iterated reweighted least-squares estimation
3. Models for overdispersed data
 - a. Quasi-likelihood
 - b. Introduction to estimating functions
4. Models for multinomial data
 - a. Log-linear models
 - b. Ordinal responses

Grading Scheme:

Assignments – 50%

Midterm – 20%

Final – 30% (April 13, 2012 9:30-12:30)

Students should be aware that they have certain rights to confidentiality concerning the return of course papers and the posting of marks. Please pay careful attention to the options discussed in class at the beginning of the semester. Students are reminded that Academic Honesty is a cornerstone of the acquisition of knowledge. Scholarly integrity is required.