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

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Instructor: [Dr. Jiguo Cao](#)

**Prerequisite:**

STAT 830 and STAT 850 or permission of the instructor.

**Textbook:**

Recommended:

1. *Categorical Data Analysis, 3<sup>rd</sup> ed.* by Alan Agresti. Publisher: Wiley
2. *Extending the Linear Model with R: Generalized Linear, Mixed Effects and Nonparametric Regression Models*, by Julian Faraway. Publisher: CRC Press
3. *Generalized Linear Models, 2<sup>nd</sup> ed.* By McCullagh and Nelder. 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 – 20%

Midterm – 20%

Final – 30%

Project – 30%

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*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 of all members of the University. Students are encouraged to review policies pertaining to academic integrity available on Student Services webpage at <http://students.sfu.ca/academicintegrity.html>*

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