



# STAT 402

## Generalized Linear and Nonlinear Modelling

Spring 2011  
Day Course

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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. Leilei Zeng](#)

### **Prerequisite:**

STAT 350

### **Textbook (Optional):**

*An Introduction to Generalized Linear Models* (3rd edition) by: A.J.Dobson; publisher: Chapman & Hall. (on three-day reserve in Bennett Library)

### **Calendar Description:**

A skills oriented unified approach to a broad array of non-linear regression modelling methods including classical regression, logistic regression, probit analysis, dilution assay, frequency count analysis, ordinal-type responses, and survival data.

### **Quantitative.**

### **Outline:**

The theory of generalized linear models has provided a unified framework for regression models and offered great insight into the connections between a variety of statistical procedures. This course introduces students to generalized linear models with attention primarily directed towards theory and applications involving different types of outcome data such as binary, categorical and count data. It extends beyond the concepts and methods of STAT 350, and targets students who are interested in advanced regression modelling.

1. Review of linear regression and likelihood methods
2. Theory of generalized linear models: the exponential family, link function, iteratively reweighted least-squares estimation
3. Models for particular types of outcomes: binary, categorical and count data
4. Goodness-of-fit and model selection
5. Overdispersion and quasi-likelihood

### **Grading Scheme:**

Assignments – 40%

Midterm – 20%

Final – 40%

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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. Please consult the General Guidelines of the calendar for more details.*

Revised October 2010