



# STAT 402

## Generalized Linear and Nonlinear Modelling

Spring 2009  
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

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Instructor: [Dr. Rachel Altman](#)

### **Prerequisite:**

STAT 350

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

*An Introduction to Generalized Linear Models* (3rd edition) by: A.J.Dobson; publisher: Chapman & Hall.

### **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:**

NOTE: This course extends the concepts, methods and approach of STAT 350-3 to cover a wide variety of types of outcome data. It employs a modern unified approach to a broad array of nonlinear regression problems.

1. Brief review of linear regression and likelihood theory
2. Theory of generalized linear models: the exponential family, link function, iteratively reweighted least-squares estimation
3. Goodness-of-fit and model selection
4. Models for particular types of outcomes: binary, categorical, count, multinomial
5. Overdispersion and quasi-likelihood
6. Survival analysis  
(or as much of the above as time permits.)

### **Grading Scheme:**

Assignments – 50%

Midterm – 20%

\*Final – 30%

\*Students must achieve 50% on the final exam in order pass the course.

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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 November 2008