

**STA 22101S: Applied Statistics II**  
**Fridays, 2-5 pm, SS 1083**

Spring, 2012

**Course description:** This course teaches methods of applied statistics, with the applications studied motivating the sets of methods taught. The calendar description is:

The course will focus on generalized linear models (GLM) and related methods, such as generalized additive model involving nonparametric regression, generalized estimating equations (GEE) and generalized linear mixed models (GLMM) for longitudinal data. This course is designed for Master and PhD students in Statistics, and is required for the Applied paper of the PhD Comprehensive Exams in Statistics.

Topics: Brief review of likelihood theory, fundamental theory of generalized linear models, iterated weighted least squares, binary data and logistic regression, epidemiological study designs, counts data and log-linear models, models with constant coefficient of variation, quasi-likelihood, generalized additive models involving nonparametric smoothing, generalized estimating equations (GEE) and generalized linear mixed models (GLMM) for longitudinal data.

**Grading:** The grade in the course will be based on regular homework (60%) and a final exam (40%).

**Text:** The course text is *Statistical Models* by A. C. Davison (Cambridge University Press). Highly recommended is *Principles of Applied Statistics* by D.R. Cox and C.A. Donnelly (CUP).

Additional resources will be provided as needed; I often refer to the 4th addition of *Modern Applied Statistics with S* by W.N. Venables and B.D. Ripley (Springer), *Applied Statistics* by D.R. Cox and E.J. Snell (Chapman & Hall) and *Elements of Statistical Learning*, by T. Hastie, R. Tibshirani, and J. Friedman (Springer).

**Course web page(s):** I am using Blackboard to manage the course list and grades, but the course information is all on the web page <http://www.utstat.utoronto.ca/reid/2201S12.html>. The Blackboard page for STA2201S will lead you to this page via the first announcement.

**Computing:** You are welcome to use the statistical computing package of your choice, but I will refer exclusively to the R computing package. There are some R resources listed on the course webpage.

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**Office Hours:** Thursday 1 to 3, or by appointment.