STAT 890 — Fall 2012
Selected Topics: 850-Linear Models & Applications — 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. Boxin Tang

Textbook:
No Textbook required

Course Description:
A modern approach to normal theory General Linear Models including models with random effects and "messy" data. Topics include experimental units, blocking, theory of quadratic forms, linear contrasts, analysis of covariance, heterogeneous variances, factorial treatment structures, means comparisons, missing data, random effects, mixed model formulation, estimation and inference, multi-unit designs, pseudoreplication, repeated measures.

Course Outline:

1. Introduction; scope of linear models.

2. General theory; least squares and Gauss-Markov theorem; normal linear models; quadratic forms.

3. Anova models; design issues; block designs; fractional factorial designs.

4. Model selection; diagnostics; algorithms; selection criteria.

5. Multicollinearity; ridge regression; robust estimation; the bootstrap.

6. Mixed linear models; generalized linear models; nonparametric regression.

Grading Scheme:

Assignments:	10%
Midterm 1:	25%
Midterm 2:	25%
Presentation:	20%