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. Jiguo Cao

Prerequisite:

STAT 830 and STAT 853 or permission of the instructor

Textbook:

The Elements of Statistical Learning: Data Mining, Inference, and Prediction (2nd ed.) by Trevor Hastie, Robert Tibshirani, Jerome Friedman. Publisher: Springer

Calendar Description:

An advanced treatment of modern methods of multivariate statistics and non-parametric regression. Topics may include: (1) dimension reduction techniques such as principal component analysis, multidimensional scaling and related extensions; (2) classification and clustering methods; (3) modern regression techniques such as generalized additive models, Gaussian process regression and splines.

Course Outline:

1. Problems with high dimensions,
2. Variable selection: stepwise, shrinkage, LASSO, and penalized likelihood
3. Modern regression techniques: Splines, trees, generalized additive models
4. Dimension reduction techniques: Principal components and multidimensional scaling
5. Classification and clustering methods,
6. Ensemble learning methods.

Grading Scheme:

Assignments 50%
Projects 50%

Grading is subject to change.

Revised June 26, 2013