STATS 503: Applied Multivariate Analysis  
Winter 2011  
Prof. Liza Levina

- 459 West Hall, 764-3235, elevina@umich.edu. To contact me, please use the time before and after class and office hours instead of e-mail whenever possible.
- Office Hours: Mon 2:30-4, Fri 3:30-5, 459 West Hall.
- Lecture: MW 1-2:30, B760 East Hall.
- Course Web page: ctools.umich.edu
- GSI: Xiang Zhou, xiangzh@umich.edu. Office hours Tue 3:00-5:00pm, 443 West Hall. Direct all questions about R to Xiang.
- Text: None. Notes will be posted on Ctools.

Topics: Principal components analysis, classification (discriminant analysis, decision trees, nearest neighbor classifiers, logistic regression, support vector machines, ensemble methods), clustering (agglomerative and partitioning methods, model-based methods), other dimension reduction techniques, categorical data analysis. The objective is to learn what methods are available and, more importantly, when they should be applied.

Prerequisites: Linear algebra, introductory probability and mathematical statistics, and Stats 500 or equivalent. If in doubt, please talk to me right away.

Computing: The software we will be using for this course is R, which can be downloaded for free from www.r-project.org. If you prefer a different statistical package, you are welcome to use it, but sample code and GSI assistance will only be provided for R.

Grading: Homework 25%, Midterm (Feb. 23, in class) 30%, Final (April 21, 4:00 pm - 6:00pm) 30%, Project 15%.

Additional information:

- You are responsible for obtaining all notes from Ctools.
- There will be 6 homework assignments which involve analyzing data in R and are due in class. The worst homework score will be dropped. Late homeworks are not accepted. If you are unable to attend class, email your homework to the GSI before the due date.
- You are allowed and encouraged to discuss homework with each other, but ultimately all questions must be written up independently. Identical homeworks will receive no credit.
- Questions about homework grading should be directed to the GSI.
- For the project, you should form groups of three, find a dataset, analyze it using the methods from the class, and write a formal report. Statistics students are strongly encouraged to team up with students from other departments who may want to analyze data from their own research projects or disciplines.
- Exams are open notes and do not involve a computer.