ST617 – MULTIVARIATE METHODS – (2004 SPRING)

Instructor: Professor Lidia Rejtő
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Lectures: Tuesday 3:30–6:30 pm 108 Memorial Hall

Office Hours: T 2:00 pm – 3:00 pm or by appointment.

Note: Because of my duties as Director of the StatLab, I may not always be present during these hours.


Suggested: Hastie T., Tibshirani R., Friedman J.: *The Elements of Statistical Learning*  
Spector, P.: *An Introduction to S and S-Plus*

Material to be covered:
- Introduction Ch1
- Matrices Ch2: sec 1,2,3,5,6
- Means, Variances, Expectation Operator and Covariance, Correlation
- Matrices Ch3: sec 1–6
- Multivariate Normal Ch4: sec 1,2,3,4,5,6,7
- Principal Components Ch8: sec 1,2,3,4,A
- Factor Analysis Ch9: sec 1,2,4,5,6
- Discriminant Analysis Ch11
- Clustering Ch12
- Parts of Ch5, 6 and notes

Computing: For some problems we will use S-Plus or R, MINITAB or SAS. These are matrix languages for matrix manipulations. Because of the nature of the problems very little computation can be done by hand. Most of the assignments will need to be done on a computer.

Data: We will use the data provided by the authors and some other sample data sets. If you have an interesting multivariate data set that you would like to share with the class please see me.

General Thrust of the Course: This is an applied course. That does not mean cook book. The methods that will be discussed are very powerful and therefore especially subject to misuse. It is important that you try to get the feel of when and where to use these methods and understand their limitations.

Assignments: Assignments normally be made weekly and you will have a week to complete them. Many of these will be collected. Homework and notes will be posted on my website. While it is fine to study together with classmates, what each person hands in should represent her or his own work. Students may be asked to explain their solutions to homework problems to the class in a blackboard presentation. There will be a mid-term exam and a two part final (take home and in class). The date of the final exam will be announced later.

Grading: Grades will be based on ten units. Homework and mid-term exam each count as three units and the final examination count as four units.