STA 4702 Applied Multivariate Statistics

Prerequisites: STA 4234 or equivalent

Meeting Times: MWF 11:00-11:50AM, Spring 2010

Classroom: SE 271

Instructor: Prof. Lianfen Qian, SE 244, 561-297-2486, Email: Lqian@fau.edu

Instructor Office Hours: MWF 10:00-11:00AM or by appointment

Course Description:
This course provides an introduction to multivariate statistics, with an emphasis on descriptive and exploratory methods. Vectors and matrices operation is the basis of the course. The course will introduce to multivariate distributions for random vectors, Hotelling’s T-test and multivariate ANOVA, analyses of interdependence including methods such as principal components analysis (PCA), multidimensional scaling (MDS), factor analysis and clustering and analysis of dependence including canonical correlation and discriminant analysis. If time permits, it can cover logit choice models, structural equation modeling or other topics of interest to the students. The course is a mix of theory and hands on application to data.

Required Text:

Reference Texts:

Grading:
Weekly Homework: 70%
Final Project: 30%

Homework:
There will be weekly assignments that include both theory questions and a data analysis. Please submit hardcopies of all homework assignments.

Final Project:
Students will conduct an analysis of their own or a provided dataset using multivariate techniques. The write-up is to be presented in the form of a scientific paper suitable for publication in a peer-reviewed journal. The completed paper is
limited to 5 double-spaced pages long plus bibliography, figures, and tables. In addition, please provide an appendix containing the programming statements used and the output of the analyses. Your project must be approved by me, so please submit a 1-page proposal of your project no later than Friday, April 2. I would also like to arrange a meeting with you individually to go over the data and anticipated analyses so please indicate when you are available to meet on your 1-page summary. The final report is due no later than noon Wednesday 28 April. The paper can be handed in anytime before that as well.

**Computing:**

It is assumed that students have access to the internet for purposes of email and web browsing. In addition, homework and the project require familiarity with software that does statistical computations. Examples include MINITAB, SAS, SPSS, JMP, R, S+, or MATLAB. My examples will be mostly in MINITAB and R but you may use whichever software you are familiar with.

**Policies and Additional Information :**

1. Occasionally, additional materials or other notes (interesting websites, pointers to recent interesting articles, etc.) will be placed on the class web site.
2. The class Email account will be used occasionally to answer questions or possibly to send out additional information to everyone. Be sure your campus email address is current in the system because we will be using blackboard listserv created by IRM.
3. Late homework will not be accepted and will be recorded as a 0 grade. If you are going to miss a class or have a scheduling conflict, return the assignment before the due date!
4. It is the responsibility of the student to work all of the assigned homework problems independently (which means by yourself, on your own). The experience gained from doing these problems is invaluable and necessary for the understanding of the material we shall be covering. Please note that obtaining help from fellow students or others on a homework assignment is considered cheating by the University and is not allowed unless I explicitly state that the work is to be done in groups.
5. We do not give extra credit, so please do not ask. Plan ahead and study so that it does not become an issue.

**University Policies:**

**Academic Dishonesty:**

All members of the University Community share the responsibility to challenge and make known acts of apparent academic dishonesty. Acts of academic dishonesty will not be tolerated and will be referred to the Student Honor Council.

**Academic accommodations:**

If you have a documented disability and wish to discuss academic accommodations with me, please contact me as soon as possible.