**STAT9370**: Multivariate Analysis  
Spring Semester, 2012  
**Time:** 11:00-11:50, MWF  
**Location:** MDLBH 10  

**Instructor:** Athanasios Christou Micheas, Ph.D.  
**Office:** 134G Middlebush Hall  
**Office Hours:** 12:10-12:50, MWF (Also by appointment)  
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**Course Web Site:**  

**Text:**  

**Recommended:**  
- Multivariate Analysis, K. Mardia, J. Kent and J. Bibby, 1979  
- Generalized Multivariate Analysis, Kai-Tai Fang and Yao-Ting Zhang, 1990  

**Prerequisites:** STAT 4760/7760 and MATH 4140/7140  

**Topics to be covered:**  
- Matrix Algebra Review: Matrix properties and definitions  
- Multivariate Normal Distribution Theory: Definitions-Characterizations, Geometrical aspects, Derivative distributions: Non-central $\chi^2$, $t$, Wishart  
- Statistical Inference based on Multivariate Normal sampling: Confidence Ellipsoids, Hotelling $T^2$, Likelihood Ratio tests  
- General Distribution Theory: linear transformations, quadratic forms, eigenvalues, correlation coefficients  
- Elliptically Contoured Distributions  
- Principal Component Analysis  
- Factor Analysis  
- Canonical Correlation Analysis  
- Discriminant Analysis  
- Cluster Analysis
Homework:

- There will be at least five problem sets assigned during the semester.
- **Late homework will not be accepted.**
- When submitting your homework:
  - Display clearly on the top of the first page: your name(last, first), the course name and section and the assignment number.
  - Homework should be done on standard-size paper (8 1/2" by 11").

Exams:

- There will be two midterm examinations and a comprehensive final exam (or project). The dates for the exams are as follows (same room for all, MDLBH 10):
  - Midterm I: Friday, March 2
  - Midterm II: Friday, April 13
  - FINAL EXAM: TBA
- Examinations must be taken at the scheduled times. Make-up exams will not be given.
- All exams are closed book. Calculators are allowed to help in numerical calculations.

Grading:
Your grade will be based on a weighted average of your midterm scores (20% each), homework average (25%), and final exam score or project (35%).

Honesty:
Academic honesty is fundamental to the activities and principles of a university. All members of the academic community must be confident that each person’s work has been responsibly and honorably acquired, developed and presented. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. The academic community regards academic dishonesty as an extremely serious matter, with serious consequences that range from probation to expulsion. When in doubt about plagiarism, paraphrasing, quoting, or collaboration, consult the course instructor.

Cell Phones:
It is your responsibility as a student of this university, to have your cell phones, ipods, kindles etc CLOSED before entering the classroom. If a cell phone rings, you text, or you use electronic devices during a lecture or exam, you will suffer an automatic **10% reduction of your final grade.** Only one warning will be given. Using cell phones in class is not proper university conduct.