Department of Mathematics and Statistics
Math 421 Applied Multivariate Statistical Analysis
Fall 2012

Instructor   **:** Nusrat Jahan,
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Office Hours : Wednesday 11:30 – 2:30 pm, TuTh 12:30 – 1:30 pm, and also by appointment.

Class time & location: TuTH 9:30 am – 10:45 am, Burruss 0030

Prerequisites: Math 238 or Math 300 and Math 321 or Math 322

Text Book: Applied Multivariate Statistical Analysis (6th edition) by Richard A. Johnson and Dean W. Wichern.

Course Description: This is a matrix algebra based introductory course of multivariate statistics. Covering the basic concepts and methodologies related to multivariate data. Topics included in the course are: multivariate normal distribution, canonical correlation, principal component analysis, factor analysis, discriminant analysis, Hotelling's T2 tests, multivariate analysis of variance, multiple regression, cluster analysis.

Midterm Exams: October 16 and November 15 (tentative dates)

Homework: Approximately 8 homework assignments will be given during the semester. The recommended software package for the course is SAS.

Final Exam: Final exam is comprehensive. Date & Time will be announced in class.

Grade distributions:
Midterm exams: 40%,   **Homework:** 20%,   **Project:** 15%,   **Final exam:**   25%

Grading Policy: 97 & up : A+   87 to 89 : B+   77 to 79 : C+   67 to 69 : D+
                    93 to 96 : A   83 to 86 : B   73 to 76 : C   63 to 66 : D
                    90 to 92 : A–   80 to 82 : B–   70 to 72 : C–   60 to 62 : D–

                    Below 60 : F

Academic Integrity: All students are expected to read and be familiar with the James Madison University's Academic Integrity Code. All charges of cheating or other academic offenses will be taken with utmost seriousness.

Important link: www.jmu.edu/syllabus.

Addendum

Goals of the Course

1.To provide knowledge of the theory and application of statistics appropriate for (1) an entry level statistics position in business, industry, or government which requires collaboration with a statistician or (2) for graduate work in biomedical, social-behavioral and management sciences as well as education.
   a. Basic counting principles.
   b. Using the principles of survey and experimental design for gathering data.
   c. Organizing data graphically and numerically.
   d. Being proficient in the use of computer software to solve problems and analyze data.
   e. Using stochastic principles to model problems, develop solutions.
   f. Understanding the concept of sampling variability and its relevance in inference.
   g. Using confidence intervals and tests of significance in interpreting data.
   h. Using stochastic principles to assess the significance of data.

Nature of the Course Content

MATH 421. Applied Multivariate Statistical Analysis.
3 credits. *Offered fall.*

Multivariate statistical methods with applications. Topics include canonical correlation, clustering, discriminant analysis, factor analysis, multivariate analysis of variance, multiple regression, multidimensional scaling and principal component analysis. *Prerequisites: MATH 300 or MATH 238; and MATH 321 or MATH 322.*