

MATH 499-3 (Applied Multivariate Analysis) January 2009

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OFFICE HOURS To be posted (Subject to Change),
or by appointment
TEXT Methods of Applied Multivariate Statistics
by M. S. Srivastava

COURSE OUTLINE

Topic	Duration
Basics of Vectors & Matrices,	1 week
Multivariate Normal Distribution & Introduction to Statistical Software	1 week
Hotelling's T^2 for Inference on Location	1 weeks
Multivariate Analysis of Variance	2 weeks
Discriminant Analysis	2 weeks
Cluster Analysis	2 weeks
Principal Component and Factor Analysis	2 weeks
Review	1 week

GRADING

1. There will be one mid-term test and one term project which will require the use of the SAS and R statistical analysis software packages. The weights for course work are as follows:

Term Paper	75%
Mid-Term Test	25%
Total	100%

2. The date for the mid-term test worth 25% will be on Wed 25 Feb 2008.
3. Except for illness or compassionate reasons which must be documented, students who are absent from the mid-term test will receive a mark of zero for the mid-term test.

PLAGIARISM, CHEATING, & EXAMINATION IMPERSONATION

Read the Undergraduate Regulations and Policies on pages 56 through 67, inclusive of the UNBC Undergraduate Academic Calendar 2008 2009.

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COURSE DESCRIPTION

The course will emphasize applications of various techniques in multivariate statistical analysis and gaining familiarity with the relevant programs in the statistical packages SAS and R.

GOALS

The topics to be covered in this course are: the basics of vectors and matrices, the multivariate normal distribution, Hotelling's T^2 statistic for one and two samples, multivariate analysis of variance, discriminant analysis, cluster analysis, principal components, and factor analysis. The goals of the course are to provide the student with a solid understanding of the concepts underlying the course topics and the ability to apply the appropriate methodological techniques for the analysis of multivariate data.

PREREQUISITES

This course assumes that the student understands and can apply the methods of interval estimation and hypothesis testing concerning parameters in normal populations, the multiple linear regression model, and the following experimental designs: completely randomized design; and randomized block design. Previous exposure to the basic theory of vectors and matrices in a course on linear algebra is preferred but not required. Previous experience with the use of statistical software packages is preferred but not required.

STYLE GUIDE FOR THE TERM PROJECT

The term paper must conform to the following standards in order to receive full marks.

1. Must be submitted on 8.5" by 11" paper using one side only with a staple in the top left hand corner.
2. Computer printouts are not to be handed in. Instead electronically cut out relevant tables or figures and affix to assignments at point of discussion. References to appendices, especially of computer printouts, will be ignored by the marker.
3. Answers must be succinct and to the point.
4. Marks will be deducted for illegibility, verbosity, inconsistency, contradictory statements, ambiguity (fence sitting), theoretical errors, mis-application of theory, and calculation mistakes.