Syllabus – Spring 2006  
IBUS 6302 Applied Multivariate Methods  
College of Business Administration  
University of Texas El Paso

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Course Objective:

To learn to make effective research decisions regarding appropriate statistical techniques in the analysis of data. To enhance researcher skills in choosing appropriate techniques, analysis of data, interpretation of results, and effective communication of results.

Course Description:

Applied multivariate statistics is designed to help students effectively apply, interpret, and evaluate different multivariate statistical techniques. Conceptual understanding, including appropriate circumstances for use of each technique, the development of practical “how-to” skills, and an understanding of the trade-offs made in technique choice will be emphasized. Because business disciplines use a broad range of statistical techniques, the most commonly used techniques will receive the most attention; likewise, combinations of techniques are often used to answer research questions and the appropriate methods for combining techniques will be discussed. Several methods will be explored including mediation and moderation in regression, regression with dichotomous variables, MANOVA/discriminant analysis, multiway frequency analysis, cluster analysis, factor analysis, equivalence of measurement, and SEM. For each method, the pros, cons, statistical tests and inferences, and the assumptions will be identified. Students will gain hands on experience through several project assignments that will span the semester. These assignments will require students to learn how to draw statistical and substantive conclusions from the results of their analyses. Students will prepare written summaries of results using accepted discipline-specific writing guidelines that are common formats for journals in business disciplines.

Attendance Policy:
Attending all classes is expected. At the faculty member’s discretion, three absences will result in the student being dropped from the course.

Academic Honesty:
UTEP Policy: “Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.” Regents’ Rules and Regulations, Part One, Chapter VI, Section 3, Subsection 3.2, Subdivision 3.22.
Because scholastic dishonesty harms the individual, all students, and the integrity of the university, policies on scholastic dishonesty will be strictly enforced.

**Disability:**
UTEP Policy: “If you feel you may have a disability that requires accommodations, contact the Disabled Student Services Office at 747-5148, go to the Union Bldg. East, Room 106, or e-mail dss@utep.edu.”

**Required Texts:**


Joreskog, K. & Sorbom, D. 1993. LISREL 8: Structural equation modeling with the SIMPLIS command language. Hillsdale, NJ: Erlbaum. One copy has been ordered with the software for the PhD student office.

**Required Software:**

SAS Statistical Package.
LISREL 8 Statistical Package.
Learning Objectives

A. Students will be proficient in using SAS and/or LISREL software as appropriate to perform and interpret the results of the statistical analyses described below.
   1. OLS Regression, diagnostics, model building, hypothesis testing.
   2. Testing interactions and higher order terms in OLS regression: moderation and mediation, and polynomial terms
   3. Regression analysis for qualitative, truncated, and dichotomous dependent variables (logistic, multinomial logistic, & Tobit)
   4. Generalized Least Squares
   5. Discriminant Analysis
   6. MANOVA & MANCOVA
   7. Cluster Analysis
   8. Factor Analysis (Principal Components, Exploratory, & Confirmatory)
   9. Structural Equation Modeling (LISREL)
   10. Hierarchical Linear Modeling

B. Students will have a basic familiarity that will enable them to identify situations when each of the following types of statistical analyses might be appropriate as well as the purposes of these analyses:
   1. Canonical Correlation
   2. Multiway Frequency Analysis
   3. Profile Analysis
   4. Survival Failure Analysis
   5. Time Series Analysis
   6. Multiple Dimensional Scaling
   7. Conjoint Analysis

Grading

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
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<tbody>
<tr>
<td>Mid-term exam</td>
<td>100</td>
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<tr>
<td>Final exam</td>
<td>100</td>
</tr>
<tr>
<td>Homework assignments</td>
<td>200</td>
</tr>
<tr>
<td>Class contribution</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>400</td>
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A = 90-100%
B = 80-89%
C = 70-79%
D = 60-69%
F = 59% and below
Topics and Readings:
Additional readings will be assigned during the semester

1. Course Overview
   T & F: Chapters 1 & 2
   Hair et al., Chapters 1 & 2


2. Multiple regression, interpretation, assumptions, diagnostics, and model testing
   T & F: Chapters 4 & 5
   Hair, et al, Chapter 4


   Suggested:

3. Regression Interactions (Moderation & Mediation) & Polynomial


4. Regression: Qualitative, Truncated, and Categorical Dependent Variables: Logistic, Multinomial Logistic, & Tobit

T & F: Chapters 12
Hair, et al. Chapter 5


Suggested:

5. Linear Modeling of Multiple Outcome Variables: MANOVA & MANCOVA
T & F: Chapters 9
Hair, et al, Chapter 6


DOWNSIZING IN PRIVATIZED FIRMS IN RUSSIA, UKRAINE, AND BELARUS. By: Filatotchev, Igor; Buck, Trevor; Zhukov, Vladimir. Academy of Management Journal, Jun2000, Vol. 43 Issue 3, p286-305


6. Discriminant Analysis
T & F, Chapter 11
Hair, et al., Chapter 5


7. Cluster Analysis
T & F: Chapter 10
Hair, et al, Chapter 8


INTERNATIONAL HUMAN RESOURCE STRATEGY AND ITS DETERMINANTS: THE CASE OF SUBSIDIARIES IN TAIWAN. By: Hannon, John M.; Ing-Chung Huang; Bih-Shiaw Jaw. Journal of
8. Factor Analysis
   T & F: Chapter 13
   Hair et al., Chapter 3


   T & F: Chapter 14
   Hair, et al, Chapters 10, 11, & 12
   Kline: entire book


11. Introduction to Other Topics

a. Cannonical Correlation
   T & F, Chapter 6
b. Multiway Frequency Analysis
   T & F, Chapter 7
c. Profile Analysis
   T & F, Chapter 10
d. Survival Failure Analysis
   T & F, Chapter 15
e. Time Series Analysis
   T & F, Chapter 16
f. Multi-dimensional Scaling
   Hair et al., Chapter 9
g. Conjoint Analysis
   Hair, et al. Chapter 7
h. Meta-analysis