BUSI 6240
Applied Multivariate Statistics
Spring 2021
Course Syllabus

Instructor
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Office: BLB 385B
Office hours: Mondays 12pm to 2pm

Section 001: Meets Mondays 2pm to 4:50pm in BLB 035.

COURSE CATALOGUE DESCRIPTION:
Applications of multivariate statistical procedures involving data reduction techniques and analyzing multidimensional relationships in business research. Topics include multivariate analysis of variance, discriminant analysis, logistic regression, exploratory factor analysis, cluster analysis, multidimensional scaling and conjoint analysis.

Prerequisites: BUSI 6220 Applied Regression Analysis

REQUIRED COURSE MATERIALS:
Applied Multivariate Statistical Concepts
By Debbie L. Hahs-Vaughn
ISBN: 978-0415842365

COURSE OBJECTIVES:
At the end of this course you should be able to:
1. Explain the data assumptions, difficulties, and processes of the most common multivariate statistical techniques used in business research.
2. Explain the selection of appropriate techniques for different research questions and data.
3. Demonstrate a proficiency in multivariate analysis in common statistical packages and the interpretation of results.
4. Explain the most common research designs, data sources, statistical techniques, and analysis challenges in your discipline, as well as expected future trends.

GRADING:
Your grade will be determined on the following:
1. Homework Assignments (20%)
2. Learning Assessments (20%)
3. Exams (30%)
4. Projects/Presentations (20%)
5. Class Participation/Attendance (10%)

Letter Grade Equivalent
A (90% to 100% of points)
B (80% to 89.9% of points)
C (70% to 79.9% of points)
D (60% to 69.9% of points)
F (59.9% or below of points)
Class Attendance, Participation, and Professionalism (100 points)
Students are expected to attend class, be on time, be prepared, and be actively engaged in all aspects of the course. All absences should be discussed with the instructor before the missed class. Multiple absences or tardiness will result in a reduced course grade.

Individual Project (200 points)
Students will be assigned an individual project that focuses on quantitative studies in the top academic journals from their discipline. Students will conduct a review of 50 recent quantitative articles published in top journals in a specific research area as chosen by the student and approved by the instructor. The emphasis will be on cataloging research designs, data sources and statistical techniques used in each article. Students will be expected to synthesize this data into a coherent explanation of current trends in their research area, as well as discuss current challenges and expected future avenues of research. This project is intended to ensure that each student understands the tools used at the highest level of research within their discipline, as well as understand general trends in business research. Students will briefly present their findings to the class in Week 15 and 16. The project is worth 200 points.

Learning Assessments (200 points)
Students are expected to review the assigned course material before class. Students will complete ten short assignments and/or quizzes over the chapters and material covered in the course. See the schedule of events for the dates on which each learning assessment will take place. Each Learning Assessment is worth 20 points (200 total points).

Homework (200 points)
Students will individually complete ten homework assignments on the chapters and material covered in the course. Assignments will be posted in Canvas and are designed to ensure that students are understanding both the conceptual and computational elements of the course, though the emphasis will be on the computational elements, use of the relevant statistical software packages, and the written interpretation of results. See the schedule of events for due dates. Homework will be submitted via Canvas. Each homework is worth 20 points (200 total points).

Exams (300 Points)
Two exams will be given during the term (Week 8 and 14) that will allow students to demonstrate understanding of statistical concepts covered in the course as well as demonstration of proficiency analyzing data with appropriate multivariate statistical techniques. Exams may include in-class and take-home portions. The individual exams will involve use of the methods learned in class to analyze, interpret, and explain data from various research scenarios. In general, you will be given research scenarios along with a data set (or sets) that corresponds to the scenario(s). You will be asked to answer the research questions by running the correct analyses, interpreting the results, and writing up your results in a format suitable for a journal article. Each exam will be worth 150 points (300 total points).

ODA: If you have a registered disability with the Office of Disability Access, please see me privately and we can develop an appropriate accommodation.
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Class Topics</th>
<th>Deliverables Due</th>
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| 1    | 1/11  | Class Overview  
|      |       | Project Assignment  
|      |       | Stats Review  
|      |       | Ch 1 – Multivariate Statistics  
|      |       | Ch 2 – Statistics Review  
|      |       | Ch 3 – Data Screening                                                      |                                                |
| 2    | 1/18  | MLK Day No Class                                                            |                                                |
| 3    | 1/25  | Stats Review (continued)  
|      |       | Project Assignment Approval                                                 | HW1 (Ch 1, Ch 2, and Ch 3)  
|      |       | Learning Assessment 1                                                        |                                                |
| 4    | 2/1   | Moderation and Mediation                                                    | HW2 (Moderation/Mediation)  
|      |       | Learning Assessment 2                                                        |                                                |
| 5    | 2/8   | Ch 4 – Multiple Linear Regression                                           | Learning Assessment 3                          |                                                |
| 6    | 2/15  | Ch 5 – Logistic Regression                                                   | HW3 (Ch 4)  
|      |       | Learning Assessment 4                                                        |                                                |
| 7    | 2/22  | Review of Material to Date                                                  | HW4 (Ch 5)  
|      |       | Learning Assessment 5                                                        |                                                |
| 8    | 3/1   | Exam 1 (Chapters 1-5;  
|      |       | Moderation/Mediation                                                        | Learning Assessment 6                          |
| 9    | 3/8   | Ch 6 – Multivariate Analysis of Variance                                     |                                                |
| 10   | 3/15  | Ch 7 – Discriminant Analysis                                                 | HW 5 & 6 (Ch 6)  
|      |       | Learning Assessment 7                                                        |                                                |
| 11   | 3/22  | Ch 9 – Exploratory Factor Analysis                                           | HW7 (Ch 7)  
|      |       | Learning Assessment 8                                                        |                                                |
| 12   | 3/29  | Ch 10 – Path Analysis, Confirmatory Factor Analysis, Structural Equation Modeling | HW8 (Ch 9)  
|      |       | Learning Assessment 9                                                        |                                                |
| 13   | 4/5   | Ch 11 – Multilevel Linear Modeling                                          | HW9 (Ch 10)  
|      |       | Learning Assessment 10                                                       |                                                |
| 14   | 4/12  | Exam 2 (Chapters 6-7, 9-11)                                                 | HW10 (Ch 11)  
|      |       | Project Presentations                                                        |                                                |
| 15   | 4/19  | Project Presentations                                                        | Project Write-Up submitted via Canvas  
|      |       | Project Presentations                                                        |                                                |
| 16   | 4/26  | Project Presentations                                                        | Project Presentations (if needed)               |

Dates and topics are subject to change: While I do not plan to deviate from the above schedule, unforeseen events may require adjustments.
Additional Information from UNT
Emergency Evacuation Procedures for Business Leadership Building:

**Severe Weather** In the event of severe weather, all building occupants should immediately seek shelter in the designated shelter-in-place area in the building. If unable to safely move to the designated shelter-in-place area, seek shelter in a windowless interior room or hallway on the lowest floor of the building. All building occupants should take shelter in rooms 055, 077, 090, and the restrooms on the basement level. In rooms 170, 155, and the restrooms on the first floor.

**Bomb Threat/Fire** In the event of a bomb threat or fire in the building, all building occupants should immediately evacuate the building using the nearest exit. Once outside, proceed to the designated assembly area. If unable to safely move to the designated assembly area, contact one or more members of your department or unit to let them know you are safe and inform them of your whereabouts. Persons with mobility impairments who are unable to safely exit the building should move to a designated area of refuge and await assistance from emergency responders. All building occupants should immediately evacuate the building and proceed to the south side of Crumley Hall in the grassy area, west of parking lot 24.