Structural Equation Modeling

Instructor: Dr. Edward “Ed” Ramirez
Class Time: 9 to 11:50 am; Wednesday
Classroom: COBA 307
Phone: 404-732-4891
Email: eramirez29@utep.edu
Office: COBA 214
Office hours: 12:00 pm to 1:00 pm on Wednesday or by appointment

Course Description

The purpose of this course is to deepen your understanding of research methods, while introducing you to GLM/covariance-based analytic techniques. Broadly speaking, it focuses on the general linear model, structural equation modeling (CB-SEM—covariance-based SEM), and Partial Least Squares SEM (PLS-SEM). We will be using SPSS, Hayes’ PROCESS plugin, SAS, AMOS, and SmartPLS software packages. As such, this course will provide you with an additional set of analytical tools to add to your growing toolkit.

Course Objectives

While this course focuses on the analysis of primary data derived from surveys, you will be able to apply some of the techniques presented to the analysis of secondary data sets, as well. As such, we will explore how researchers deal with dichotomous outcome variables, latent constructs, and nonparametric bootstrapping procedures to test path coefficients for their significance, for example. Upon completion of the course, you should have a firm foundation on the following areas:

1. Ordinary Least Squares and Logistic Regression Modeling
2. Factor Analysis
3. Cluster Analysis for segmentation using latent variables
4. Structural Equation Modeling (SEM)
5. SmartPLS

Texts

(1) Structural Equation Modeling with AMOS 3rd edition by Barbara M. Byrne (Erlbaum and Associates).
(3) Discovering Statistics Using SPSS (Introducing Statistical Methods) by Andy Field
(5) Selected readings.
Seminar Structure

This seminar is fast paced, and its workload is heavy. That said, although the course is challenging, it is manageable. The seminar format is highly informal and primarily discussion based, where students will be prepared to discuss class readings and/or slides and play the lead role in the learning process, which may include conducting in-class software demonstrations. To facilitate discussion, students are expected to have carefully read the assigned readings and completed each assignment prior to class. I expect your best work. Thus, be encouraged to be over-prepared, so that you will be able to explain course-related concepts if called upon.

On additional note: You may notice that I have not updated the reading materials (the required textbooks or articles) for the class. The reason is that although there have been some incremental changes to the techniques that we will be discussing and the corresponding software programs that we will be using, they are relatively minor. That said, I will bring us up to speed on new developments. In addition, I will be requiring that each student find a new substantive article that demonstrates the research technique in use on the dates containing an asterisk.

Course Requirements

Grading

These components will determine your grade.

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<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Class Participation</td>
<td>33.3%</td>
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<tr>
<td>Class Assignments</td>
<td>33.3%</td>
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<tr>
<td>Final Examination</td>
<td>33.3%</td>
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Academic Honesty

Academic dishonesty is not condoned nor tolerated at UTEP nor in this class. Such dishonesty, when evidenced, will be reported to the Student Judicial Affairs Office at UTEP. Read UTEP’s website for more information about sanctions. Academic dishonesty is behavior in which a deliberately fraudulent misrepresentation is employed in an attempt to gain undeserved intellectual credit, either for oneself or for another. It includes, but is not necessarily limited to, the following types of cases: Plagiarism - The representation of someone else’s ideas as if they are one's own. Unauthorized Collaboration on Out-of-Class Projects - The representation of work as solely one's own when in fact it is the result of a joint effort; Cheating on Exams - The covert gathering of information from other students, the use of unauthorized notes, unauthorized aids, etc.; and Knowing Cooperation with Another Person in an Academically Dishonest Undertaking - Failure by a student to prevent misuse of his/her work by others.

Accommodations for Students with Disabilities (from the Office of the Ombudsman)
If any member of the class believes that s/he has a physical, emotional, or psychological disability and needs accommodation of any nature, contact the Disabled Student Services Office at 747-5148, go to the Union Bldg. east, Rm. 106 or email dss@utep.edu. Then notify the instructor immediately and he will work with the student to assure s/he has a fair opportunity to perform at his/her normal capabilities in the class.

**Tentative Schedule**

<table>
<thead>
<tr>
<th>Date</th>
<th>Topics/Readings</th>
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<tbody>
<tr>
<td>8/30</td>
<td>ANOVA/ANCOVA and MANOVA/MANCOVA</td>
</tr>
<tr>
<td></td>
<td>Field Ch. 9, 10, 11, and 12</td>
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<tr>
<td></td>
<td>Hair et al. Ch. 6</td>
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<tr>
<td>9/6</td>
<td>ANOVA/ANCOVA and MANOVA/MANCOVA con’t.</td>
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Assignment 1 due

<table>
<thead>
<tr>
<th>9/13</th>
<th>Regression Models</th>
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<tr>
<td></td>
<td>Field Ch. 7 and 8</td>
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<tr>
<td></td>
<td>Hair et al. Ch. 4 and 5—do not read Discriminant Analysis</td>
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<table>
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<tr>
<th>9/20</th>
<th>Regression Models*</th>
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Assignment 2 due

9/27 Factor Analysis

Field Ch. 17
Hair et al. Ch. 3

10/4 Factor Analysis con’t.


10/11 Structural Equations Modeling (Intro.)

Hair et al. Ch. 10, 11, and 12
Byrne Ch. 1, 2, and 3.

10/18 Structural Equations Modeling (Intro. con’t)

Hair et al. Ch. 10, 11, and 12
Byrne Ch. 1, 2, and 3.

10/25 SEM con’t. (Mediation and Moderation)*


**11/1 SEM con’t. (Scale Development and Invariance Testing)*

Byrne on Invariance testing.


Assignment 3 due

**11/8 Cluster Analysis**

Hair et al. Ch. 8 and 9; Sharma Ch. 7

**11/15 Cluster Analysis*"
Assignment 4 due

11/22  Partial Least Squares SEM

Selected Readings (I will email these.)

11/29  Partial Least Squares SEM *

Selected Readings (I will provide you with a flash drive)


Assignment 5 due

12/6  FINAL EXAM (due by 3pm)