Instructor: Dr. Robert E. Ployhart  
Office: DMSB 405j  
Phone: 803-777-5903  
E-mail: ployhart@moore.sc.edu  
Class Hours: 9:40-12:50, Monday  
Room: DMSB 110  
Class Website: on Blackboard  
Office Hours: Monday 1:00-2:30; before class; or by appointment

Textbook


Optional Textbook (not required)


Course Objectives

This course provides an fairly detailed introduction to Structural Equation Modeling (SEM) and all of its related models (confirmative factor analysis, latent growth, etc). These statistical models are powerful when used appropriately and are helpful for answering a variety of substantive questions. For example, if we want to evaluate the properties of our measures, test theories involving mediating processes, or examine models of method bias, the appropriate model is SEM.

This course is oriented towards scholars who want to be informed users of SEM. The class is therefore designed to be very applied. We will not go into great detail about the technical underpinnings of the various models, but will keep our focus on how they are used in practice. I will demonstrate how to use the various methods, and refer to the readings to emphasize certain points. It is important you read the articles/chapters before coming to class. Even though the readings may not make much sense before lecture, I have found students learn better because they know what questions they want to ask during lecture. There will be several articles/chapters assigned each week, but these may be adapted/edited depending on how the class is going.

This goes without saying, but I expect perfect attendance except for good reasons (e.g., conference attendance). Class will also start and end promptly, so please show up a few minutes early. Be polite and turn your cell phones off. Whenever possible, please give advance notice if you will not be able to attend a class.

Learning Outcomes

Students will complete the course with:

- Knowledge of SEM methods and applications.
• Knowledge of SEM software packages and research procedures.
• Skill in analyzing data using SEM, working with databases, and reporting results.
• Skill in presenting complex statistical information in simpler terms.
• Skill in making methods presentations.
• Ability to think critically about data and results.

Grades

Grades will be assigned according to the traditional cut-offs used at USC. Specifically, a 90 or greater is an A, 87 up to 90 is a B+, 80 up to 87 is a B. A grade of C (or lower) will be given to those who receive less than 80 percent of the available points. Grades are based on the following points:

<table>
<thead>
<tr>
<th></th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Homework Projects</td>
<td>15 (3 points each)</td>
</tr>
<tr>
<td>SEM Research Project</td>
<td>30</td>
</tr>
<tr>
<td>Class Presentation</td>
<td>30</td>
</tr>
<tr>
<td>Class Participation</td>
<td>25</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

You’ll notice that there is no exam. So long as everyone does the readings and contributes to the class discussions, I see no need for an exam. If either of these becomes problematic, a midterm/final exam may be necessary. Please do not miss the deadlines stated in the class schedule—they are real and important!

Homework Projects. There are multiple homework projects; the tentative start dates are noted in the course schedule. These projects are designed to give you experience applying the techniques we discuss in class. They will be completed on your own outside of class (although we will discuss and review them in class). They should be fairly straightforward and not demand too much of your time.

You can work on these projects in groups if you would like. However, the write-up of the projects must be on your own. This class has a zero-plagiarism policy and any indication of it will be dealt with in a harsh manner.

SEM Research Project. In addition to the homework projects, you will be expected to complete an independent research project using SEM. I want you to obtain your own dataset and use SEM (as appropriate) to analyze a series of substantively interesting, theoretically-driven research questions. I would really like you to tackle something that could result in a journal-quality submission. This may be your own data, that of an advisor/colleague, etc. If you simply cannot find any such data, ask around or I might have something to interest you.

You need to speak with me about this project and have it approved before you begin. The deadline for the project is shown in the course outline.

Presentation. At the end of the semester, each student will give a presentation describing their research project. Although the focus will be on methodology, it is expected the presentation will also provide theory, hypotheses, and implications. More detail on this presentation and how it will be graded will be provided at the appropriate time.

Class Participation. My teaching philosophy is that learning occurs best when it is part of a collective,
shared experience that is created through interaction and collaboration. This means I expect lots of class
discussion and interaction. Further, we will often work on analyses in class that will require your active
participation.

**Late Projects and Homework**

One point will be deducted for every day a project or homework is turned in late, unless you have
received advanced permission from me to turn it in late.

**University of South Carolina Honor Code & Attendance Policy**

“It is the responsibility of every student at the University of South Carolina Columbia to adhere
steadfastly to truthfulness and to avoid dishonesty, fraud, or deceit of any type in connection with any
academic program. Any student who violates this Honor Code or who knowingly assists another to
violate this Honor Code shall be subject to discipline.” For more information, go to:
http://www.sc.edu/academicintegrity/

I follow the University’s policy on attendance. It states: “Absence from more than 10 percent of the
scheduled class sessions, whether excused or unexcused, is excessive and the instructor may choose to
exact a grade penalty for such absences.” The policy may be viewed here:
http://www.sc.edu/bulletin/ugrad/acadregs.html#class%20atten

**A Note About the Course Schedule**

Although we will try to stick to the course schedule, I feel it’s important that we devote sufficient time to
review and ensure understanding. Therefore, I’ve designed some slack into the course schedule. The
course schedule dates are therefore tentative. We may also add/drop readings as the class evolves (you’ll
receive notice of this in advance). The sequence of topics is unlikely to change, however.
Tentative Course Schedule  
(subject to change and revision)

1. January 12: Review of Correlation/Regression; Introduction to Theory & Methods


Skim (focus on measurement and analysis sections):


2. January 19 (no class; MLK Holiday)

3. January 26: Introduction to SEM & Software


Skim:

4. February 2: CFA Models (First & Second Order); Classical Test Theory


*Class HW #1: Perform 1st and 2nd Order CFA models

*Must Obtain SEM Project Approval

5. February 9: Identification, Estimation, Model Fit, and Model Comparisons


6. February 16: Identification, Estimation, Model Fit, and Model Comparisons; Continued


Skim:
Note: This is the lead article to a special issue that contains many responses from leading methodologists.


7. February 23: Path Analysis and SEM

Notes provided from a workshop on how to use the SAS system for CFA/SEM; Ployhart, 2009.

*Class HW#2: Conduct Path Analysis and SEM*
8. March 2:  Review/Open Topic Day

9. March 9:  Spring Break-no class

10. March 16:  Multiple Groups Analysis, Invariance, and Latent Means (MACS)


*Class Project #3: Conduct MGCFA and MGSEM*

11. March 23:  Method Bias Models and MTMM


Skim:


**12. March 30: Moderation & Mediation**


Skim:


*Class Project #4: Conduct Mediation Models*

**13. April 6: Latent Growth Modeling; Longitudinal Modeling**
Notes provided from Center for Advancement of Research Methods and Analysis (CARMA) Workshop, Ployhart, 2010.

Chan, D. (1998). The conceptualization and analysis of change over time: An integrative approach incorporating longitudinal mean and covariance structures analysis (LMACS) and multiple indicator latent growth modeling (MLGM). *Organizational Research Methods, 1*, 421-483.


*Class Project #5: Conduct LGM*

14. April 13: Longitudinal Modeling, Continued


Skim:


15. April 20: Class Presentations

16. April 27 (last day of class): Class Presentations