

DEP 6799
Current Research Method Structural Equation Modeling
Spring 2024
Academic credit: 3 credits

Instructor Information

Instructor: Shanting Chen, Ph.D.
Email: chenshanting@ufl.edu

Office: Room 222 Psychology Building
Office hour: Thursday 1-2pm or by apt.

Class Meeting Time: Monday 12:50pm – 3:50 pm
Class Meeting Place: Psychology Building 129

The best way to contact me is via my email address above. Please allow 24 hrs to respond to your email during the weekdays. Emails sent on the weekend will be responded during the following weekdays. Please **include DEP6799 in the subject line for easy track of communication.*

Course Description

Welcome! This course introduces students to advanced statistical analyses using latent variables, a sophisticated analytic approach known as structural equation modeling (SEM). In the course students will learn a variety of SEM methods, including path analysis, exploratory and confirmatory factor analysis, mediation analysis, multiple group modeling and other moderation analysis techniques, latent growth curve modeling, mixture modeling, and multilevel modeling. A primary focus of the course is to bridge technical and analytic elements of SEM with practical applications.

Course Design

This course will be taught using lectures, in-class demonstrations, and in-class activities. In general, one hour of the class will be devoted to a laboratory component; there is not a separate laboratory meeting time. We will use the statistical modeling software program Mplus for all class/homework assignments. Mplus can be accessed through UF Apps (<https://info.apps.ufl.edu/>). Make sure to have access to Mplus after the first week of class. All students are required to participate in the labs during the designated class times. All necessary course materials will be posted on Canvas.

Assignment and Grading



Attendance and Participation (10%): Attendance at all classes is required. If you will be absent, please email me the evening before class to let me know why you will

miss class. Honesty is appreciated. If you have a valid excuse and can provide documentation (e.g., doctor's note), please bring it to the next class you attend. Excessive absences with or without excuse will detract from your grade.

Participation in class discussions and activities is also required. I will expect you to have read all readings for the week before the start of class. My lectures assume you have the basic familiarity with each statistical concept described in the readings. I plan to engage the class with the material as much as possible and as such will base 5% of your grade on your attendance and participation.



In-class assignment and homework (50%): All assignments in this class are to be based on independent, not group or collaborative, work. All homework and written assignments must use 12-point font, be double-spaced, and include your last name and the page number on all pages. All homework must include your annotated Mplus output file. Include your last name and page numbers on all output printouts, which will be emailed to me before the start of class on the due date (do NOT print your Mplus output). All sources for written assignments, including assigned readings, must be cited in the text and in a references list at the end of the assignment using APA style. Each homework and written assignment is due at the beginning of class (12:50 pm) the following week. I will deduct 1 point from late homework/papers for each day late (including weekends) unless prior arrangements have been made. If you anticipate that you will need special accommodations in the completion of an assignment, please email me or talk with me privately as early in the semester as possible.



Final Paper (40%): The final project for the course will involve using structural equation modeling to answer a research question of interest to you. My goal is that you will use data that you are currently working with, although we can discuss dataset possibilities if you do not have access to a relevant dataset for your analyses. You may NOT count your thesis/dissertation or an existing project in progress or completed analyses as your final paper for this course. This paper needs to be your original idea and work that starts in this course.

The final paper should be an abbreviated version of real paper, focusing more on the model and less on the literature.

Part 1 - Due February 19th: Write a one- to two-page summary of the proposed paper topic. The summary should include a brief summary of the existing literature informing the study, a brief description of the dataset to be used, identification of the research questions and related hypotheses, and a short description of the proposed analysis plan. An exemplar will be provided at least two weeks prior to the due date.

Part 2 – Due March 25th: This is the first draft of your paper. It should include a 3-4 page Introduction/Literature Review (including a conceptual model), a 3-4 Method section (standard sections, including an Analysis Plan), and a reference list. Although not required for Part 2, it

would be useful to include a table of the correlations and descriptives for the primary variables of interest.

Part 3 – Due April 29th: This is the final draft of your paper. It should include a revised Introduction and Method sections, a 2-3 page results section, one page Discussion section, and a reference list. You must also submit exemplar output files from Mplus for all key analyses (only electronically – please do not print) as well as your Part I submission with my comments.

You will receive more detailed information about the paper components and exemplars for Part 1 and Part 3 as guides for developing your final paper. Please note that I will not provide feedback on the paper or the Mplus models after 5pm on April 22nd. As such, please plan accordingly and have all models run before that time.

Grading Scale

Mandatory Assignments	Percentage of Grade
Class attendance and participation	10%
In-class assignments/homework (8)	50%
Final Paper	40%

Course Final Grading Scale

94 to 100%	A	73 to 76 %	C
90 to 93 %	A-	70 to 72 %	C-
87 to 89 %	B+	67 to 69 %	D+
83 to 86 %	B	63 to 66 %	D
80 to 82 %	B-	60 to 62 %	D-
77 to 79 %	C+	59 % & below	F

Books and Resources

Books: The following are required for the course. Please note that the Muthén & Muthén Mplus guide is an online resource.

Kline, R. B. (2015). Principles and Practice of Structural Equation Modeling, Fourth Edition. New York: Guilford.

Muthén, B., & Muthén, L. (2017). Mplus User's Guide (8th ed.). Los Angeles: Muthén & Muthén. (Available online at <http://www.statmodel.com/ug excerpts.shtml>)

Additional readings: In addition to the assigned sections of the books above, several additional readings will be available on Blackboard throughout the semester.

Online resources: The following online resources may be helpful throughout the course:

www.statmodel.com: The website for Mplus includes examples of syntax and output, technical appendices, powerpoints from Mplus trainings, and a discussion board. I recommend you explore this site—it has many resources for Mplus users.

<http://davidakenny.net/cm/kausalm.htm>: Statistician David Kenny has helpful introductions to and examples of SEM concepts at this website.

<http://www.ats.ucla.edu/stat/seminars/default.htm>: UCLA Institute for Digital Research and Education - has a lot of great online workshops for Mplus (and many other statistical programs).

Extensions and Late Assignments

Requests for extensions for assignments will be considered for a valid reason. These are to be made at least 48 hours in advance of the assignment due date. A rationale for the request is to be provided via email to me.

Late assignments may be emailed or physically turned in during business hours (8 am to 5 pm) by putting it in the instructor's mailbox in the Psychology main office. Work that is late (i.e., an extension was not negotiated in advance) will be deducted 1 point (from 15 points total) each day the assignment is past the due date, including weekends, beginning at the end of class on the due date.

TENTATIVE COURSE SCHEDULE			
Week	Class Topic	Reading	Assignments Due
1 8-Jan	Intro to SEM	Kline ch 1, ch 4	
2 15-Jan	NO CLASS – HOLIDAY		
3 22-Jan	Regression, path analysis, and introduction to Mplus	Kline ch 2, ch 3,	
4 29-Jan	Latent variables EFA/CFA	Kline ch 9, ch 13 Schreiber et al., 2006	Path model labeling and path analysis hw
5 5-Feb	Developing structural SEM models	Kline ch6 (pp. 117-122), ch 10, ch 11	EFA/CFA hw
6 12-Feb	Model specification, identification, evaluation, troubleshooting, model trimming	Kline ch 6 (122-144) Kline ch 7, ch 12	Structural model hw
7 19-Feb	Testing mediation and indirect effects	Baron & Kenny, 1986 MacKinnon et al., 2007 Kline ch 14	Paper Part I

8 26-Feb	Missing data approaches (FIML, imputation)	Enders ch 2 Graham, 2009 Lang & Little, 2018	Testing mediation hw
9 4-Mar	Approaches to moderation (interaction effects)	Kline ch 17 Memon et al., 2019	
Spring Break 11-Mar	NO CLASS – SPRING BREAK		
11 18-Mar	Approaches to moderation (more on interaction effects; multiple group models)	Hayes & Rockwood, 2016	Moderation hw
12 25-Mar	Latent growth curve models (basic models)	Kline ch 15 Preacher, 2019	Paper Part II
13 1-Apr	Latent growth curve models (parallel process; piecewise models, cross-lagged models)	Benner & Graham, 2009 Curran et al., 2010	Growth curve modeling hw
14 8-Apr	Mixture modeling (GMM)	Jung & Wickrama, 2008 Nylund et al., 2007	
15 15-Apr	Mixture modeling (LCA/LPA, LTA)	Nylund-Gibson & Choi, 2018 Lanza & Cooper, 2016	GMM hw
16 22-Apr	Special topics (invariance testing, MIMIC models, Multilevel SEM)	Kline ch 16 (396-421) Ledermann & Kenny, 2017 Putnick & Bornstein, 2016	LCA/LPA hw
17 29-Apr	Reading Week		Final paper due

Policies

Academic Honesty:

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code”. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are

obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor of this class.

Accommodations for Students with Disabilities:

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Student disclosures of sexual violence:

UF fosters a campus free of sexual violence including sexual harassment, domestic violence, dating violence, stalking, and/or any form of sex or gender discrimination. If you disclose a personal experience as a UF student, the course instructor is required to notify the Title IX Coordinator by completing the report form available at <https://titleix.ufl.edu/report-an-issue/>, emailing titleix@ad.ufl.edu or calling (352) 273-1094.

Course Incompletes:

A grade of Incomplete "I" will only be given in extreme circumstances (i.e., illness) and must be pre-approved by the instructor. If approved, a contract will be drawn up with the student specifying assignments and due dates. According to the University, all incomplete work must be completed by the following semester or you will receive a punitive incomplete (i.e., the same as an "E").

Online Evaluation Process

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

Campus Resources

Health and Wellness

U Matter, We Care: If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc/Default.aspx>, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS): Student Health Care Center, 392-1161.

University Police Department: 392-1111 (or 9-1-1 for emergencies).

<http://www.police.ufl.edu/>

Academic Resources

E-learning technical support: 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.

Career Resource Center: Reitz Union, 392-1601. Career assistance and counseling. <http://www.crc.ufl.edu/>

Library Support: <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center: Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <http://teachingcenter.ufl.edu/>

Writing Studio: 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <http://writing.ufl.edu/writing-studio/>

Student Complaints Campus:

https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>