"Making Educational and Social Systems Work for All"
-- UO College of Education Mission Statement

EDLD 633 STRUCTURAL EQUATION MODELING I
4 Credits – CRN 26270
University of Oregon – College of Education - Department of Educational Methodology, Policy, and Leadership

2016 Winter Term Syllabus
Meeting Days/Time: Thursdays 1:00-4:50 pm (1300-1650)
Location: Lokey 276

<table>
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<tr>
<th>Instructor: Joseph Stevens, Ph.D.</th>
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<tr>
<td>Phone: (541) 346-2445</td>
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<td>Address: 102 E Lokey Education Bldg. 5267 University of Oregon Eugene, OR 97403-5267</td>
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<td>Office Hours: Wednesdays 12:00-2:00 (except Jan. 13) or by appointment</td>
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"All models are wrong, some are useful..." (George Box)

COURSE DESCRIPTION AND OBJECTIVES
EDLD 633 Structural Equation Modeling I is the first quarter of a two quarter sequence on Structural Equation Modeling (SEM). The goal of the course is to gain familiarity and build expertise in the use of latent variable models within a structural equation modeling framework. The course includes the use and interpretation of AMOS and Mplus software. Emphasis in the course is on the mastery of concepts and principles, development of skills in the use and interpretation of SEM software, and in the development of critical analysis skills in understanding research using SEM techniques. Topics covered will include path analysis, path diagramming, covariance structures, model specification and identification, parameter and model estimation, goodness of fit testing, estimation methods, regression models, confirmatory factor analysis, hybrid models, and invariance testing.

COURSE PREREQUISITES
Before enrolling in this course, students should have the equivalent of a year of doctoral study in statistics beyond the MA or introductory level including an intermediate graduate course in applied statistics. The ideal prerequisite courses are multiple regression and multivariate statistics. Computer skills sufficient to allow proficient use of statistical software are also required to complete coursework.

REQUIRED MATERIALS


A reading list of required articles will be also be assigned and distributed on Canvas.

SOFTWARE

**AMOS:** The primary software we will use is SPSS and AMOS. SPSS 22/23 and AMOS are available in the HEDCO Learning Center computer lab (110 HEDCO) for all students registered for College of Education coursework. Free site-licensed copies are available for GTFs or UO student employees, see UO Information Technology software center if you are eligible at [https://it.uoregon.edu/software/list](https://it.uoregon.edu/software/list). Full versions of AMOS are sold by SPSS/IBM. A limited time trial version of AMOS 22 is available at: [http://www-03.ibm.com/software/products/en/spss-amos](http://www-03.ibm.com/software/products/en/spss-amos) (only for 14 days).

**Mplus:**
All course examples will also be supplemented with Mplus. No publicly available copy of Mplus software is available on campus. Mplus is not required but is optional for all assignments. However, it is well worth the effort to practice use of Mplus as it is the primary software used in SEM II (and other courses). Information on Mplus is available at: [http://www.statmodel.com/index.shtml](http://www.statmodel.com/index.shtml) and a free limited capacity “demo” version of the software is available at: [http://www.statmodel.com/demo.shtml](http://www.statmodel.com/demo.shtml). All features in Mplus Version 7.4 Base Program and Combination Add-On are available in Mplus Demo Version 7.4. The Mplus Demo Version is limited by the number of observed variables that can be used in an analysis. Student pricing is available for those who have not yet obtained a PhD.

**OTHER REFERENCES AND RESOURCES:**


SEMNET open forum SEM discussion group at: [http://www2.gsu.edu/~mkteer/semnet.html](http://www2.gsu.edu/~mkteer/semnet.html)

**COURSE STRUCTURE AND REQUIREMENTS**
EDLD 633 SEM I is organized in a seminar format. The major activities consist of a combination of lectures, group discussions, and software applications. The course will cover an introduction to SEM with an emphasis on building, specifying, estimating and testing models, confirmatory factor analysis, invariance testing, hybrid models, and related techniques. For each topic, there will be readings in the required text as well as supplementary assigned readings. Assignments include two quizzes, three homework assignments, and one brief paper as well as regular participation and discussion in the class.

HOMEWORK
Three homework projects are planned. These projects will provide a basis for seeing the range of applications available in SEM, gaining experience and facility in running SEM software and interpreting output. All projects must be completed on time to fulfill course requirements. A minimum of 10% will be deducted from late work. Homework will be peer reviewed in class and then graded by the instructor.

QUIZZES
There will be two short quizzes during the quarter covering material in the readings and lecture. Both quizzes will be composed of selected response questions (e.g., multiple-choice, true-false, etc.) and will be delivered via Canvas. The quizzes will cover lectures and readings in the period preceding the quiz and the second quiz is NOT comprehensive. I will provide sample questions before the first quiz.

PROJECT
There will be a required project consisting of the analysis and reporting of an SEM model for a problem of the student's choosing. Ideally the model will be one that the student can actually use in their own research or perhaps as the basis for a dissertation but should be one of the types of SEM models covered during the term. An outline of the project is due February 11th and must include complete specification of the proposed model including a description of the data source and variables, listing of all parameter matrices with free and fixed parameters specified, methods planned for estimation and analysis, and a complete path diagram of the model. The final completed project is due March 17th and will entail the brief but complete report of the analysis and interpretation of the SEM model and should be approximately 5 pages maximum not counting Tables and Figures. If the student does not have data available, data can be supplied by the instructor (must be arranged by February 8th). The report should be in journal style using APA manual 6th edition writing guidelines. Additional details and a grading rubric will be provided in class.

GRADING POLICY
Late work will be penalized a minimum of 10%. Work is due at the beginning of class on the due date. Homework and the project paper may not be submitted electronically. Each student is responsible for submitting his/her own original work. Any instance of academic dishonesty (e.g., plagiarism) will result in a minimum of a score of zero for the assignment. Grading will be assigned on percentage of possible points, 90% and higher for an “A”, 80-89% for a “B”, etc. Work at the “C- “level or below is graded as an “F” or a “No Pass.” Within each letter grade category, minus and plus grades will be awarded at the discretion of the instructor. Homework will count 45%, the quizzes will count 40%, and the project will count 15% of the course grade.

COURSE INCOMPLETES will be offered only rarely in unusual circumstances that truly prevent the student from completing course work during the regular course schedule. My policy on incompletes is more restrictive than the general UO policy. Incompletes will NOT be awarded simply because you have not been able to finish course work. Incompletes will only be awarded when there is a documented medical or similar unforeseen emergency that prevents the student from completing course work.
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<tr>
<th>WEEK</th>
<th>TOPIC</th>
<th>ASSIGNMENT</th>
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<td>1 January 7</td>
<td>Introduction, Overview of topics and course structure</td>
<td>Kline 1-5 (Review and foundations), AMOS 1-66 (AMOS page numbers refer to the AMOS 21 User’s Guide) Lei &amp; Wu (2007)</td>
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<td>2 January 14</td>
<td>Path Analysis, SEM models with observed variables</td>
<td>Kline 6-7, AMOS 67-79 Pearl, J.</td>
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<tr>
<td>7 February 18</td>
<td>Invariance Testing</td>
<td>Kline 16; AMOS 159-207 MacCallum et al. (1994) Homework 2 Due</td>
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COURSE POLICIES

ATTENDANCE POLICY
Attendance is required to succeed in this course and master the course material. If a student does miss class, it is the student’s responsibility to get class notes, and handouts or other distributed materials. Contact the instructor in case of illness or emergencies that preclude completing assignments or attending class sessions. Messages can be left on the instructor's voice mail or e-mail at any time of the day or night, prior to class. If no prior arrangements have been made before class time, the absence will be unexcused.

ACADEMIC MISCONDUCT POLICY
All students are subject to the regulations stipulated in the UO Student Conduct Code (http://conduct.uoregon.edu). This code represents a compilation of important regulations, policies, and procedures pertaining to student life. It is intended to inform students of their rights and responsibilities during their association with this institution, and to provide general guidance for enforcing those regulations and policies essential to the educational and research missions of the University.

ACADEMIC HONESTY
In using information from other sources, it is very important that you summarize the main ideas in your own words, and attribute correctly any direct quotes or significant ideas from anyone else. The UO policy on academic dishonesty says: "Plagiarism is the inclusion of someone else’s product, words, ideas, or data as one’s own work. When a student submits work for credit that includes the product, words, ideas, or data of others, the source must be acknowledged by the use of complete, accurate, and specific references. By placing one’s name on work submitted for credit, the student certifies the originality of all work not otherwise identified by appropriate acknowledgements. Unauthorized collaboration with others on papers or projects can inadvertently lead to a charge of plagiarism. If in doubt, consult the instructor. In addition, it is plagiarism to submit as your own any academic exercise (for example, written work, printing) prepared totally or in part by another. Plagiarism also includes submitting work in which portions were substantially produced by someone acting as a tutor or editor. (http://tep.uoregon.edu/workshops/teachertraining/learnercentered/syllabus/academicdishonesty.html)

CONFLICT RESOLUTION
Several options, both informal and formal, are available to resolve conflicts for students regarding bias, unfairness, or other improper treatment. It is important to exhaust the administrative remedies available to you including discussing the conflict with the specific individual, contacting the Department Head, or within the College of Education, you can contact Associate Dean for Research and Academics, at 346-1399 or lindstrm@uoregon.edu; or Surendra Subramani, student advisor, at 346-1782 or surendra@uoregon.edu. Outside the College, you can contact:
- UO Bias Response Team: 346-1139 or http://bias.uoregon.edu/whatbtrt.htm
- Conflict Resolution Services 346-0617 or http://studentlife.uoregon.edu/SupportandEducation/ConflictResolutionServices/tabid/134/Default.aspx
- Affirmative action and Equal Opportunity: 346-3123 or http://aaeo.uoregon.edu/

DIVERSITY
It is the policy of the University of Oregon to support and value diversity. To do so require that we:
- Respect the dignity and essential worth of all individuals.
- Promote a culture of respect throughout the University community.
- Respect the privacy, property, and freedom of others.
- Reject bigotry, discrimination, violence, or intimidation of any kind.
- Practice personal and academic integrity and expect it from others.
- Promote the diversity of opinions, ideas and backgrounds which is the lifeblood of the university.

DOCUMENTED DISABILITY
Appropriate accommodations will be provided for students with documented disabilities. If you have a documented disability and require accommodation, arrange to meet with the course instructor within the first two weeks of the term. The documentation of your disability must come in writing from the Accessible Education Center in the Office of Academic Advising and Student Services. Disabilities may include (but are not limited to) neurological impairment, orthopedic impairment, traumatic brain injury, visual impairment, chronic medical conditions, emotional/psychological disabilities, hearing impairment, and learning disabilities. For more information on Accessible Education Center, please see http://aec.uoregon.edu

Mandatory Reporting
UO employees, including faculty, staff, and GTFs, are mandatory reporters of child abuse when the employee has “reasonable cause to believe any child with whom the employee comes in contact has suffered abuse or that any person with whom the employee comes in contact has abused a child.” UO employees, including faculty, staff, and GTFs, also are mandatory reporters of prohibited discrimination when the employee obtains “credible evidence that any form of prohibited discrimination by or against students, faculty or staff is occurring.” “Prohibited discrimination” includes discrimination, and discriminatory harassment, including sexual harassment and sexual assault. This statement is to advise you that that your disclosure of information about child abuse or prohibited discrimination to a UO employee may trigger the UO employee’s duty to report that information to the designated authorities. Please refer to the following links for detailed information about mandatory reporting:

https://hr.uoregon.edu/policies-leaves/general-information/mandatory-reporting-child-abuse-and-neglect/presidents-message
http://around.uoregon.edu/mandatoryreporting

EXPECTED CLASSROOM BEHAVIOR

Classroom expectations include:

- Participating in class activities
- Respecting the diversity of cultures, opinions, viewpoints in the classroom
- Listening to fellow students, professors, and lecturers with respect
- Arriving on time, prepared for class
- Attending for the duration of class; not reading other materials, books, newspapers; working on laptop or other electronic devices on matters unrelated to class
- Please turn off cell phones and other electronic devices when class begins

Note. Racist, homophobic, sexist, and other disrespectful comments will not be tolerated.

GRIEVANCE

A student or group of students of the College of Education may appeal decisions or actions pertaining to admissions, programs, evaluation of performance and program retention and completion. Students who decide to file a grievance should follow the student grievance procedure, or alternative ways to file a grievance outlined in the Student Grievance Policy (https://education.uoregon.edu/academics/student-grievance) or enter search: student grievance.

INCLEMENT WEATHER

In the event the University operates on a curtailed schedule or closes, UO media relations will notify the Eugene-Springfield area radio and television stations as quickly as possible. In addition, a notice regarding the university’s schedule will be posted on the UO main home page (in the “News” section) at http://www.uoregon.edu. Additional information is available at http://hr.uoregon.edu/policy/weather.html.

If an individual class must be canceled due to inclement weather, illness, or other reason, a notice will be posted on Canvas or via email. During periods of inclement weather, please check Canvas and your email rather than contact department personnel. Due to unsafe travel conditions, departmental staff may be limited and unable to handle the volume of calls from you and others.