

Causal Modeling
16:300:685:01
3 Credits

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| Instructor: Chia-Yi Chiu | Day & Time: Thursdays 5:00PM - 8:00PM |
| Phone Number: 848-9320832 | Location: Online Synchronously |
| Email: chia-yi.chiu@gse.rutgers.edu | Office Hrs: By appointment |
| Mode of Instruction: | |
| <input checked="" type="checkbox"/> Lecture | <input type="checkbox"/> Hybrid |
| <input type="checkbox"/> Seminar | <input type="checkbox"/> Online |

Learning goals

1. The course covers path analysis, latent variables, measurement models, and structural models, specifically including confirmatory factor analysis, structural models, multi-group models, latent growth curve models, and model assessment.
2. The course offers fundamental knowledge and techniques of SEM so that students can bring home with skills required to analyze the data and evaluate the outcomes using SEM.

Course catalogue description

Introduction to structural equation modeling, including latent variables; confirmatory factor analysis; diagnosing model fit and testing alternative models; and multi-sample designs. Multilevel (or hierarchical) linear models as related to multi-sample designs (such as identifying hierarchical structures, random compared with fixed effects); variance components; and designs with repeated measurements.

Class materials/ Textbooks

1. Principles and Practice of Structural Equation Modeling by Kline (4rd Ed.)
2. LISREL is the required software for this course. It used to be available from the computer lab Room 208 in the GSE building. However, the lab was shut down permanently this summer (2021) and LISREL is also gone. I am still searching to see whether there are any other resources available on campus, so hold on if you are thinking about purchasing a copy.
3. LISREL Handouts

Regulations

1. The course will be taught synchronously online through Canvas (or Zoom, if necessary). Surfing online during the classes for materials not related to the course is prohibited.
2. The teaching materials will be posted on Canvas. Filling notes will be used during the lectures. Hence, you will need to print out the notes before each of the lectures (or have them ready on the other computer so that you can take notes). All students are expected to make arrangements to acquire all materials and information covered during absence from any class.

Evaluation

1. Students' attendance to the class and participation in discussions are expected.
2. There will be 2-3 LISREL assignments. They in total are worth 30% of the final grade.
3. There will be a midterm which provides me information about your understanding on the first half of the instruction. This exam is worth 30% of the final course grade. The midterm will take place on **October 21**.
4. Students will also be evaluated by the final project. The final project is worth 40% of the final course grade. Each student is anticipated to group with another student. I will select a journal article and students will need to answer questions related to the article and reproduce the results. The article will be given on **November 18** and the final report is due on **December 9**.
5. No grades of "Incomplete" will be assigned for this course.
6. The final course grade will be determined by the homework assignments, midterm, and the quality of your final project.

Academic Integrity Policy:

The Office of Student Conduct supervises issues related to violations of academic integrity (see <http://academicintegrity.rutgers.edu>). Please familiarize yourself with the university policy on academic integrity that can be found in the above link.

Office of Disability Services:

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: <https://webapps.rutgers.edu/student-ods/forms/registration>.

Course Schedule

Tentative list of topics for discussions (by week)

| Week | Topic | Assignments/ Readings | Due |
|-------------|------------------------------|----------------------------------|--------------|
| 1 | Introduction and reviews | K1, K2, K3, K4, K5 | 9/2 |
| 2 | Path Analysis | K6 | 9/9 |
| 3 | Path Analysis | K7 | 9/16 |
| 4 | Introduction to SIMPLIS | LISREL Handouts | 9/23 |
| 5 | Model Fit | K12 | 9/30 |
| 6 | Confirmatory Factor Analysis | K13, LISREL Handouts | 10/7 |
| 7 | Review | | 10/14 |
| 8 | Midterm | | 10/21 |

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| 9 | Measurement and Structural Models | K14 | 10/28 |
| 10 | Measurement and Structural Models | K14, LISREL Handouts | 11/4 |
| 11 | Mean and Latent Growth Models | K15, LISREL Handouts | 11/11 |
| 12 | Multi-Sample models | K11, LISREL Handouts | Article posted 11/18 |
| 13 | <i>Thanksgiving Break (no class)</i> | | 11/25 |
| 14 | Multi-Sample models | K11, LISREL Handouts | 12/2 |
| 15 | Final exam | | Final analysis due 12/9 |