

PSYC 5415 - MULTILEVEL MODELING

Course	PSYC 5415
Instructor	Dr. Yan Liu
Term	Fall 2024
Course Delivery	In-person
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Office Location	B546 Loeb
Office Hours	TBA

COURSE DESCRIPTION/INSTRUCTOR'S STATEMENT

This course introduces students to multilevel linear modeling (MLM), also known as hierarchical linear modeling or mixed-effects modeling. This course combines conceptual and mathematical understanding with practical implementation of MLM analyses. Topics include understanding nested data structure, random intercepts and slopes, between- and within-group effects, centering strategies, longitudinal data analysis, cross-classified models, and effect size calculation.

Classes will be divided between lectures and hands-on exercises. Students will use R software and Mplus for data analysis, learning practical experience with real-world datasets. Students should attend class with a laptop computer. The skills that you will have gained by the end of the course include:

- Have a basic understanding of advanced statistical methods
- Be able to analyze clustered data and longitudinal data
- Conduct statistical analyses using R and Mplus programs
- Apply statistical methods and interpret the results

EVALUATION

Students will be evaluated based on lab activities, one group presentation, assignments, and a term paper.

TEXTBOOKS

Garson, G. D. (2012). *Hierarchical Linear Modeling: Guide and Applications*. Thousand Oaks, California: SAGE Publications, Inc. ISBN: 9781412998857

Singer, J. D. & Willett, J. B. (2003). *Applied Longitudinal Data Analysis: Modeling Change and Event Occurrence*. NY: Oxford University Press. ISBN: 0195152964

Note. We will use a few chapters from Singer and Willett's book. If you prefer not to purchase the book, you can obtain copies of these chapters from me.

Supplementary readings will also be provided.