

# **PSYC 621. Seminar in Quantitative Methods:**

## **Design and Analysis of Research on Change and Individual Differences**

### **Spring 2021**

**Instructor:** Carol Prescott      cprescot@usc.edu

**Class meetings:**    Thursdays, 2-5:50 pm by Zoom

**Description:** This course will provide hands-on experience analyzing longitudinal and clustered data to study change and other forms of variability in human behavior. The course will be taught from an individual differences perspective and the focus will be on providing practical experience students can apply to their own research. The format will be a combination of lecture and workshop with hands-on analysis of real datasets. Examples will be presented using SAS and Mplus software packages, but students may use alternatives (e.g., R, Lavaan) to conduct their analyses.

Topics will include:

- Measurement issues in identifying change and differences
- Psychometric models for evaluating measurement of change
- Designing longitudinal data collections
- Analyses to investigate change, including latent growth and latent change models
- Estimating sources of variance using multilevel models applied to data from families and schools
- Estimating genetic and environmental sources of individual differences using SEM with data from twins and siblings

We will also cover practical issues such as:

- Dealing with non-random missing data
- Visual / graphic methods for understanding and presenting data
- Matching your analysis method to your research question

Additional topics will be selected based on student interests (e.g., models for measured genes, gene x environment interactions, measure harmonization).

**Prerequisites:** Knowledge of basic statistical concepts (sampling, distributions, parameter estimation) and a graduate course in SEM or regression analysis. Successful completion of PSYC 501 and 503 preferred.