

SYLLABUS

COURSE NUMBER: SurvMeth 988.202 (2 credit hours)

COURSE TITLE: *MULTI-LEVEL ANALYSIS OF SURVEY DATA*

CREDITS: 2 credit hours

PREREQUISITES: At least one graduate-level course in statistics or quantitative methods, and experience with multivariate regression models, including both analysis of data and interpretation of results.

PURPOSE:

Although many surveys gather data on multiple units of analysis, most statistical procedures cannot make full use of these data and their nested structures: for example, individuals nested within groups, measures nested within individuals, and other nesting levels that may be of analytic interest. In this workshop, participants are introduced to an increasingly common statistical technique used to address both the methodological and conceptual challenges posed by nested data structures -- hierarchical linear modeling (HLM, which is also known as mixed linear models or random effects models). The course demonstrates multiple uses of the HLM software in addition to the use of software that will fit these models as mixed effect models such as SPSS (but the instructor can also help with the use of R or STATA), including growth-curve modeling, but the major focus is on the basic logic of multi-level models and the investigation of organizational effects on individual-level outcomes and individual growth. The multi-level analysis skills taught in this workshop are equally applicable in many social science fields: sociology, public health, psychology, demography, political science, and in the general field of organizational theory. Typically, the course enrolls students from all these fields. Students will learn to conceptualize, conduct, interpret, and write up their own multi-level analyses, as well as to understand relevant statistical and practical issues.

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LEARNING
OUTCOMES:

Basics: Know and understand the basic assumptions and conditions for the use of hierarchical linear models. Differentiate the uses for and understand the different types of models. Applications: Understand the basic models. Be able to identify appropriate data structures for hierarchical linear modeling. Understand the appropriate use of each model for the various data structures. Apply, interpret, and verbally summarize the results from a hierarchical linear model computer analyses.

TEACHING
STRATEGIES:

The workshop will include a combination lectures, discussions, and lab time. The workshop will also include some independent reading assignments.

TEXTBOOKS AND COURSE MATERIALS

1. Raudenbush, S., & Bryk, A. (2002). Hierarchical Linear Models: Applications and Data Analysis Methods (2nd Edition). Sage Publications, Inc. (Required)

COURSE TOPICS

| <u>Date</u> | <u>Topic</u> | <u>Reading</u> |
|-----------------------|--|---------------------|
| June 18 th | Morning: Introduction/ The Basic Logic of HLM Afternoon: Basic Examples/Intro to SPSS/HLM | Chapter 1 and 2 |
| June 19 th | Morning: Basic Examples/Intro to SPSS/HLM Afternoon: Lab work on basic HLM | Chapter 4 |
| June 20 th | Morning: Individual Change/Growth Models Afternoon: Lab work on growth | Chapter 6 |
| June 21 st | Morning: Assessing HLM Afternoon: Lab Work on Fit | Chapter 9 |
| June 22 nd | Morning: Three Level Models Afternoon: Cross-Classified Random Effects | Chapter 8 and 12 |