

**E10.2040 Advanced Topics in Quantitative Methods:
Multi-Level Modeling – Growth Curves (2 points)**

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Fall 2009

Lecture: Tuesdays 3:30-6:10 pm (first 7 weeks); lab 6:20-7:50pm Office: 318E Kimball Hall
Location: TBD Phone: 212-992-9407
Office Hours: Tuesdays 2:30-3:30 pm, and by appointment email: marc.scott@nyu.edu
Text: Singer & Willett, *Applied Longitudinal Data Analysis*
Software: STATA

Note: This course will use Blackboard. Email is the preferred form of communication. If you call my office phone, it is best to email me as well.

COURSE OVERVIEW: This is a course on models for multilevel growth curve data. These data arise in longitudinal designs, which are quite common to education and applied social, behavioral and policy science. Traditional methods, such as OLS regression, are not appropriate in this setting, as they fail to model the complex correlational structure that is induced by these designs. Proper inference requires that we include aspects of the design in the model itself. Moreover, these more sophisticated techniques allow the researcher to learn new and important characteristics of the social and behavioral processes under study. In this module, we will develop and fit a set of models for longitudinal designs (these are often called growth curve models). The course assignments will use state of the art statistical software to explore, fit and interpret the models.

COURSE PREREQUISITE: E10.2004 (Advanced Modeling I: Topics in Multivariate Analysis) or equivalent. ***This prerequisite will be strictly enforced. Consult with the instructor if you wish to substitute an alternative.***

COURSE PRACTICUM: Students are strongly encouraged to enroll in E10.20xx, a practicum in multi-level growth curve models, offered in the second half of the term, in which guided research projects using the skills developed in this course are developed more fully.

COURSE REQUIREMENTS:

Participation: 10% You are expected to attend class and participate in class discussions
Homework problems: 60% There will be about 6 problem sets that will require some computing, analysis, and interpretation.
Project: 30% There will be a moderate-length data analysis project (and write-up) instead of a final exam.

COURSE HANDOUTS: Handouts will be available on Blackboard by the Monday preceding class. It is the student's responsibility to print out and review the notes before coming to class.

COURSE READINGS: Weekly readings from the course text will be assigned. We cannot review everything in the book during lecture, so it is essential for you to do the reading and ask questions in class so that you fully understand the material.

Late assignment policy: Assignments are to be handed in on time.

SCHEDULE

<i>Date</i>	<i>Topic</i>	<i>S&W Chapters</i>
Sep	8 Intro to multi-level modeling as distinct from OLS regression	1
	15 Data structures arising in longitudinal and grouped data; Exploratory techniques	2
	22 Growth curve models: specification, fitting	3
	29 Growth curve models: more complex examples	4
Oct	6 Time-varying predictors; variably-spaced occasions	5
	13 Discontinuities; non-linearities	6
	20 Variance components (estimation, interpretation)	7