Mplus Short Courses, Alexandria, Virginia, November 7-11, 2005

**Statistical Analysis with Latent Variables Using Mplus**

Muthén and Muthén will offer five one-day short courses on November 7, 8, 9, 10, and 11 in Alexandria, Virginia. These courses can be taken individually or in combination. The courses include regression, exploratory and confirmatory factor analysis, equation modeling, growth modeling, modeling with categorical outcomes, multilevel modeling, and modeling with categorical latent variables including latent class analysis, growth mixture modeling, and discrete-time survival mixture analysis. For each topic, issues of model specification, identification, estimation, and model modification will be discussed. Several examples will be examined. Modeling strategies will be presented. Mplus input setups will be used for interpretation of analysis results.

**Pricing Information**

Enrollment for the short courses is limited. Registration is available on a first-come, first-served basis. The early registration rate of $250 per day is in effect until September 1, 2005. After that, the registration rate is $295 per day. Catered breaks are included, but lunches are not included.

**Cancellation Policy:** A full refund will be made if a written request is received by September 1, 2005. Muthén & Muthén reserves the right to cancel or reschedule the short courses.

To register for Mplus Short Courses, please visit our [online store](#).

**Instructors**

**Bengt O. Muthén** obtained his Ph.D. in Statistics at the University of California, Los Angeles and is Professor at the Graduate School of Education & Information Studies at UCLA. He is a former President of the Psychometric Society and currently has an Independent Scientist Award from the National Institutes of Health for methodological research.

**Linda K. Muthén** is the Director of Product Development at Muthén & Muthén. She obtained her Ph.D. in the Research Methods Division of the Graduate School of Education at UCLA. She was formerly the Manager of Quality Control Support at BMDP Statistical Software.

**Course Information**
The courses will be taught from 8:30am to 5:30pm each day. Course material will be presented in English. Following are the topics for each day:

**Day 1, Monday, November 7: Traditional Latent Variable Modeling Using Mplus**

Prerequisite: Regression analysis and introductory structural equation modeling

- Key concepts in linear regression analysis
- Path analysis
- Exploratory factor analysis (EFA)
- Confirmatory factor analysis (CFA)
- EFA in CFA
- Simple structure CFA
- Bi-factor CFA
- Second-order CFA
- Measurement invariance and population heterogeneity
- CFA with covariates
- Multiple group analysis
- Structural equation modeling (SEM)

**Day 2, Tuesday, November 8: Growth Modeling With Latent Variables Using Mplus**

Prerequisite: Intermediate understanding of latent variable SEM

- Introductory growth modeling
  - Ideas behind modeling of individual differences in development
  - Comparison of multilevel, random effect mixed linear models, and SEM approaches
  - Growth modeling using a latent variable framework
  - Linear growth model
  - Growth model with free time scores
  - Covariates in the growth model
  - Centering
  - Piecewise growth model
  - Growth models with individually varying times of observation
  - Regression among random coefficients
  - Multiple process growth models

- Advanced growth modeling
  - Two-part growth modeling when outcomes have strong floor effects
  - Multiple group growth models
  - Multiple cohorts
  - Randomized preventive interventions
Multiple indicator growth models
- Power calculations and design issues
- A growth model as part of a bigger model

**Day 3, Wednesday, November 9: Observed And Latent Categorical Variable Modeling Using Mplus**

Prerequisite: Intermediate understanding of latent variable SEM or Days 1 and 2

- Modeling with observed variables that are categorical, censored, or counts
  - Logit, multinomial logit, probit, censored-normal, Poisson regression
  - Path analysis
  - Item response theory
  - Factor analysis with covariates
  - Multiple-group modeling
  - Growth modeling

- Modeling with latent variables that are categorical (mixture modeling)
  - Regression mixture analysis
  - Randomized response modeling of sensitive questions
  - Complier-average causal effect (CACE) estimation in randomized trials
  - Latent class analysis
  - Latent class analysis with covariates
  - Confirmatory latent class analysis
  - Violations of conditional independence
  - Latent class factor analysis, factor mixture modeling, mixture modeling

**Day 4, Thursday, November 10: Longitudinal Modeling With Categorical Latent Variables Using Mplus**

Prerequisite: Intermediate understanding of latent variable SEM or Days 1, 2, and 3

- Latent transition analysis, Hidden Markov modeling
- Latent class growth analysis
- Growth mixture modeling with latent trajectory classes
- Randomized trials and treatment effects varying across latent trajectory classes
- Latent class growth analysis vs. growth mixture modeling
- Numerical integration, mixtures, and non-parametric representations of factor distributions
- Discrete-time survival mixture analysis
- Latent variable analysis with missing data
Day 5, Friday, November 11: Multilevel Modeling With Latent Variables

Prerequisite: Intermediate understanding of latent variable SEM, Days 1, 2, 3, and 4, or intermediate understanding of multilevel modeling

- Cross-sectional analysis with two-level data
  - Multilevel regression analysis
  - Multilevel path analysis
  - Multilevel factor analysis
  - Multilevel structural equation modeling
  - Multivariate modeling of family members, twin modeling
  - Multilevel latent class analysis

- Longitudinal analysis
  - 3-level growth modeling
  - 3-level, 2-part growth modeling
  - 3-level growth mixture modeling

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Location and Accommodations

The short courses will be held at the Old Town Holiday Inn Select in Alexandria, Virginia, just outside Washington, D.C. More information about the hotel can be found at http://www.ichotelsgroup.com/h/d/hi/1/en/hd/axeot. A special rate of $169 plus 10% room tax and $1 occupancy tax is available for a limited number of rooms until October 6, 2005 on a first-come first-served basis. Please mention Mplus Short Courses for a reservation.

Holiday Inn Select
480 King Street
Alexandria, VA 22314
(703) 549-6080

Click here for more detailed Driving Directions to the Old Town Holiday Inn Select.

Click here for other Mplus short courses.