Mixed Models Analyses Using SAS®

Kód kurzu: AGLM42

This course teaches you how to analyze linear mixed models using the MIXED procedure. A brief introduction to analyzing generalized linear mixed models using the GLIMMIX procedure is also included.

Pro koho je kurz určen

Statisticians, experienced data analysts, and researchers with sound statistical knowledge

Co vás naučíme

- analyze data (including binary data) with random effects
- fit random coefficient models and hierarchical linear models
- analyze repeated measures data
- obtain and interpret the best linear unbiased predictions
- perform residual and influence diagnostic analysis
- address convergence issues

Požadované vstupní znalosti

Before attending this course, you should:

- know how to create and manage SAS data sets
- have experience performing analysis of variance using the GLM procedure of SAS/STAT software
- have completed and mastered the Statistics 2: ANOVA and Regression course or completed a graduate-level course on general linear models
- have an understanding of generalized linear models and their analysis.;Exposure to mixed models and matrix algebra will enhance your understanding of the material. Some experience manipulating SAS data sets and producing graphs using SAS statistical graphing procedures is also recommended

Osnova kurzu

Introduction to Mixed Models

- identifying fixed and random effects
- describing linear mixed model equations and assumptions
- fitting a linear mixed model for a randomized complete block design using the MIXED procedure
- writing CONTRAST and ESTIMATE statements to perform custom hypothesis tests

Examples of Mixed Models in Some Designed Experiments

- fitting a linear mixed model for two-way mixed models
- fitting a linear mixed model for nested mixed models
- fitting a linear mixed model for split-plot designs
- fitting a linear mixed model for crossover designs

Examples of Mixed Models with Covariates

- fitting analysis of covariance models with random effects
- performing random coefficient regression analysis
- conducting hierarchical linear modeling

Best Linear Unbiased Prediction

- explaining BLUPs and EBLUPs
- producing parameter estimates associated with the fixed effects and random effects
- explaining the difference between LSMEANS and EBLUPs
- computing LSMEANS and EBLUPs using the MIXED procedure

Repeated Measures Analysis

GOPAS Praha
Na Strži 2097/63
140 00 Praha 4 - Krč
Tel.: +420 226 201 390
info@gopas.cz

GOPAS Brno
Nové sady 996/25
602 00 Brno
Tel.: +420 530 513 590
info@gopas.cz

GOPAS Bratislava
Dr. Vladimíra Clementisa 10
Bratislava, 821 02
Tel.: +421 902 903 132
info@gopas.sk

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- discussing issues on repeated measures analysis, including modeling covariance structure
- analyzing repeated measures data using the four-step process with the MIXED procedure

Mixed Models Residual Diagnostics and Troubleshooting

- performing residual and influence diagnostics for linear mixed models
- troubleshooting convergence problems

Additional Information about Linear Mixed Models (Self-Study)

- discussing issues associated with unbalanced data, data with empty cells, estimation and inference of variance parameters, and different denominator degrees of freedom estimation methodsIntroduction to Generalized Linear Mixed Models and Nonlinear Mixed Models
- discussing the situations where generalized linear mixed models and nonlinear mixed models analysis are needed
- performing the analysis for generalized linear mixed models using the GLIMMIX procedure

GOPAS Praha
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Tel.: +420 530 513 590
info@gopas.cz

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info@gopas.sk

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