SAS - Longitudinal Data Analysis Using Discrete and Continuous Responses

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This course is for scientists and analysts who want to analyze observational data collected over time. It is not for SAS users who have collected data in a complicated experimental design. They should take the Mixed Models Analyses Using SAS® course instead.

**Skills Gained**

- create individual and group profile plots and sample variograms
- use PROC MIXED to fit a general linear mixed model and a random coefficient model
- plot information criteria for models with selected covariance structures
- generate diagnostic plots in PROC MIXED
- fit a binary generalized linear mixed model in PROC GLIMMIX
- fit an ordinal generalized linear mixed model and a model with spline effects in PROC GLIMMIX
- fit a binary GEE model in PROC GENMOD.

**Who Can Benefit**

- Epidemiologists, social scientists, physical scientists, and business analysts

**Prerequisites**

- Before attending this course, you should be able to
- execute SAS programs and create SAS data sets
- fit models using the GLM and REG procedures in SAS/STAT software.

**Course Details**

**Longitudinal Data Analysis Concepts**

- understanding the merits and analytical problems associated with longitudinal data analysis
Exploratory Data Analysis
• graphing individual and group profiles
• identifying cross-sectional and longitudinal patterns

General Linear Mixed Model
• understanding the concepts behind the linear mixed model
• examining the different covariance structures available in PROC MIXED
• fitting a general linear mixed model in PROC MIXED

Evaluating Covariance Structures
• creating a sample variogram that illustrates the error components in your model
• plotting information criteria for models with selected covariance structures

Model Development, Interpretation, and Assessment
• learning the model building strategies in PROC MIXED
• creating interaction plots
• specifying heterogeneity in the covariance structure
• computing predictions using EBLUPs
• fitting a random coefficient model in PROC MIXED
• generating diagnostic plots in PROC MIXED using ODS Graphics

Generalized Linear Mixed Models
• fitting a binary Generalized Linear Mixed Model in PROC GLIMMIX

Applications Using PROC GLIMMIX
• fitting an ordinal generalized linear mixed model in PROC GLIMMIX
• fitting a generalized linear mixed model with splines in PROC GLIMMIX

GEE Regression Models
• fit a binary GEE model in PROC GENMOD