

SAS Analytics Curriculum

Introduction to the SAS Language

- ❖ Introduction
- ❖ Basic Language: Rules and Syntax
- ❖ Creating SAS Data Sets
- ❖ The INPUT Statement
- ❖ SAS Data Step Programming Statements Their Uses
- ❖ Data Step Processing
- ❖ More on INPUT Statement
 - Use of Pointer controls
 - The trailing@ line-hold specifier
 - The trailing@ @ line-hold specifier
 - Uses of RETAIN statement
 - The use of line pointer controls
- ❖ Using SAS Procedures

More on SAS Programming and some Applications

- ❖ More on the DATA and PROC STEPS
 - Reading data from files
 - Combining SAS data sets
 - Saving and retrieving permanent SAS data Sets
 - User- defined in formats and formats
 - Creating SAS data sets in procedure steps
- ❖ SAS Macros Concepts
 - Creating modular code with Macros
 - Adding parameters to Macros

❖ SAS Procedures for Computing Statistics

- The UNIVARIATE procedures
- The FREQ procedure

❖ Some Useful Base SAS Procedures

- The PLOT procedures
- The CHART procedures
- The TABULATE procedure

Statistical Analysis of Regression Models

❖ An Introduction to Simple Linear Regression

- Simple linear regression using PROC REG
- Lack of fit test using PROC ANOVA
- Diagnostics use of case statistics
- Predictions of new y values using regressions

❖ An Introduction to Multiple Regression Analysis

- Multiple regression analysis using PROC REG
- Case Statistics and residual analysis
- Residual Plots
- Examining relationships among regression variables

❖ Types of Sums of Squares Computed in PROC REG and PROC GLM

- Model comparison technique and extra sum of squares
- Types of sums of squares in SAS

❖ Subset selection using PROC REG for Model selection

- Subset selection using PROC REG
- Other options available in PROC REG for model selection

❖ Inclusion of squared Terms Product terms in Regression Models

- Including interaction terms in the model
- Comparing slopes of regression lines using interaction
- Analysis of models with higher-order terms with PROC REG

Analysis of Variance Model

- ❖ Introduction
 - Treatment Structure
 - Experimental Designs
 - Linear Models
- ❖ One-way Classification
 - Using PROC ANOVA to analyze one-way Classifications
 - Making preplanned (or a priori) comparisons using PROC GLM
 - Testing orthogonal polynomials using contrasts
- ❖ One-Way Analysis of Covariance
 - Using PROC GLM to perform one-way covariance analysis
 - One-way covariance analysis: Testing for equal slopes
- ❖ A two Factorial in a Completely Randomized Design
 - Analysis of a two-way factorial using PROC GLM
 - Residual Analysis of Interaction
- ❖ Two-Way Factorial: Analysis of Interaction
- ❖ Two-Way Factorial: Unequal Sample sizes
- ❖ Two way Classification: Randomized Complete Block Design
 - Using PROC GLM to analyze a RCBD
 - Using PROC GLM to test for nonadditivity

Analysis of Variance: Random and Mixed Effects Models

- ❖ Introduction
- ❖ One-way Random Effects Model
 - Using PROC GLM to analyze one-way Random Effects Models
 - Using PROC MIXED to analyze one-way Random Effects Models

- ❖ Two –way Crossed Random Effects Model
 - Using PROC GLM and PROC MIXED to analyze two –way Crossed Random Effects Model
 - Randomized complete block design: Blocking when treatment factors are random
- ❖ Two-Way Nested Random Effects Model
 - Using PROC GLM to analyze two-way nested random effects models
 - Using PROC MIXED to analyze two-way Nested Random Effects Models
- ❖ Two-way Mixed Effects Models
 - Two-way Mixed Effects Models: Randomized Complete Blocks Design
 - Two-way Mixed Effects Models: Crossed Classification
 - Two-way Mixed Effects Models: Nested Classification
- ❖ Models with Random and Nested Effects for More Complex Experiments
 - Models for nested factorials
 - Models for split-plot experiments
 - Analysis of split-plot experiments using PROC GLM
 - Analysis of split-plot experiments using PROC MIXED

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