This course is for those who need to learn data manipulation techniques using SAS® DATA and procedure steps to access, transform, and summarise SAS data sets. The course builds on the concepts that are presented in the SAS Programming 1: Essentials course and is not recommended for beginning SAS software users.

Learn how to:
• control SAS data set input and output
• combine SAS data sets
• summarise, read, and write different types of data
• perform DO loop and SAS array processing
• transform character, numeric, and date variables.

Who should attend:
Business analysts and SAS programmers.

Prerequisites:
Before attending this course, you should have at least six months of experience writing SAS programs or have completed the SAS Programming 1: Essentials course and used SAS for at least one month. Specifically, you should be able to:
• submit a SAS program
• diagnose and correct syntax errors
• examine descriptor and data portions of a SAS data set
• access SAS data libraries
• read and create SAS data sets
• read Excel spreadsheets
• read delimited raw data files
• examine data errors when reading raw data files
• use SAS procedures to validate data
• clean invalid data
• create variables
• combine SAS data sets
• use global statements
• use labels and formats, including user-defined formats
• subset observations
• direct output to external files
• produce summary reports using the FREQ and MEANS procedures.

Course contents:
Introduction
• course logistics
• course overview
• SAS syntax review
• navigating the SAS windowing environment (self-study).

Controlling Input and Output
• outputting multiple observations
• writing to multiple SAS data sets
• selecting variables and observations.

Summarising Data
• creating an accumulating total variable
• accumulating totals for a group of data.

Reading Raw Data Files
• reading raw data files with formatted input
• controlling when a record loads
• additional techniques for list input (self-study).
Data Transformations
• manipulating character values
• manipulating numeric values
• converting variable type.

Debugging Techniques
• using the PUTLOG statement
• using the DEBUG option.

Processing Data Iteratively
• DO-loop processing
• SAS array processing
• using SAS arrays.

Restructuring a Data Set
• rotating with the DATA step
• using the TRANSPOSE procedure
• Combining SAS Data Sets
• using data manipulation techniques with match-merging.

Other SAS® Languages
• an overview of other languages
• using the SQL procedure
• the SAS macro language
• Learning More
• SAS resources
• beyond this course.

Software addressed
This course addresses the following software products:
• Base SAS®.
This course is appropriate for learners who are using SAS® 8 or SAS® 9 software.

Training Path for Programmers/Analysts

For SAS Programmers

SAS® Certified Base Programmer Fast Track

Training Preparation for Base Programmer Certification

SAS® Programming 1: Essentials → SAS® Programming 2: Data Manipulation Techniques

SAS® Enterprise Guide for Experienced SAS® Programmers

Training Preparation for Advanced Programmer Certification

SAS® Macro Language 1: Essentials → SAS® SQL 1: Essentials → SAS® Programming 3: Advanced Techniques and Efficiencies

SAS® Macro Language 2: Developing Macro Applications

For SAS Enterprise Guide Users

SAS® Programming Essentials for Experienced SAS® Enterprise Guide® Users

SAS® Enterprise Guide® 1: Querying and Reporting

SAS® Enterprise Guide® 2: Advanced Tasks and Querying

NEW