

Programming 1: SAS® Essentials

Duration: 3 units **CEUs: 1.8**

AUDIENCE

This course is designed for those who want to write SAS programs to accomplish typical data-processing tasks. This course will show attendees how to read data into SAS, perform simple manipulation and write basic reports.

BENEFITS

This course concentrates on how to

- ♦ Read and write raw data files and SAS data sets
- ♦ Explore and summarize data by generating frequency tables and descriptive statistics
- ♦ Create SAS data variables, recode and compute data values
- ♦ Subset and combine multiple SAS files
- ♦ Produce publishable listing and summary reports in standard text, HTML, XML and RTF form
- ♦ Create publishable graphs in Active X form

PREREQUISITES

You should have a basic understanding of computers and computer systems. You can acquire this skill by completing the Introduction to Programming Concepts Using SAS Software course.

COURSE TOPICS

SAS System Basics

- ♦ Accessing the SAS System
- ♦ Navigating within the SAS windows including the editor, log, and output windows
- ♦ Creating and executing SAS programs in batch and interactive mode
- ♦ Understanding errors in the SAS log
- ♦ Exploring program output
- ♦ Understanding SAS data set and library structure
- ♦ Creating DATA and PROC steps
- ♦ Understanding SAS syntax and SAS naming conventions
- ♦ Working with temporary and permanent SAS data sets

Creating Reports

- ♦ Using the REPORT Procedure
- ♦ Creating reports in a WYSIWYG interactive environment without code
- ♦ Creating reports in a batch environment with code and NOWD
- ♦ Using COLUMN, DEFINE, and COMPUTE statements for structure
- ♦ Using ODS to generate HTML, RTF and XML reports.
- ♦ Using Report options such as WIDTH=, FORMAT=, DISPLAY, GROUP, HEADLINE and HEADSKIP
- ♦ Summarizing and Sorting reports
- ♦ Adding titles, footnotes and labels to reports
- ♦ Using the PRINT procedure
- ♦ Selecting report columns with the VAR statement
- ♦ Grouping reports with the BY statement
- ♦ Summing report columns with the SUM statement
- ♦ Producing frequency tables using the FREQ procedure

Creating Graphs

- ♦ Producing vertical and horizontal bar charts with the GCHART procedure, VBAR and HBAR statements
- ♦ Understanding chart variables
- ♦ Using RUN-group processing for multiple graphs in the same session
- ♦ Understanding options to tailor graphs, such as DISCRETE, SUMVAR=, and TYPE=

Reading SAS Data Sets

- ♦ Reading data sets with the SET statement
- ♦ Restricting data set size by selecting variables with DROP= and KEEP= options
- ♦ Using IF-THEN/ELSE logic processing
- ♦ Understanding the difference between subsetting IF and WHERE clause processing to restrict observations

Creating SAS Data Sets

- ♦ Reading raw data using list, column and pointer input
- ♦ Naming variables
- ♦ Understanding how to read any type of data using SAS informats
- ♦ Using INFILE and INPUT statements to read raw data
- ♦ Examining the structure of a SAS data set and its variables' attributes using the CONTENTS procedure
- ♦ Creating new variables using SAS functions and assignment statements

Recoding and Reorganizing Data

- ♦ *Using SAS formats to recode data values for better presentation in reports and analysis*
- ♦ *Using the FORMAT procedure to create user defined value label*
- ♦ *Reordering rows of data with the SORT procedure*

Summarizing Your Data

- ♦ *Calculating descriptive statistics with the MEANS and SUMMARY procedures*
- ♦ *Grouping data using the CLASS statement*
- ♦ *Analyzing data values using the VAR statement and appropriate functions such as SUM, MEAN, MEDIAN and more*
- ♦ *Generating one-way and multi-way frequency tables using the FREQ procedure*
- ♦ *Using the TABLES statement in the FREQ procedure to specify analysis structure*

Combining SAS Data Sets

- ♦ *Concatenating SAS data sets using the SET statement*
- ♦ *Merging multiple SAS data sets on common key variables*
- ♦ *Using the SQL procedure*
- ♦ *Comparing methods of merging (joining) data sets*

Software Used: Base SAS Software, SAS/GRAPH® Software.