Duration: 60 hours

SAS Training Overview

This SAS training class covers SAS Base and Advanced Modules.

- **SAS/BASE**
- **SAS/SQL**
- **SAS/MACROS**
- **SAS/GRAPHS**
- **SAS/STAT**
- **SAS/ACCESS**
- **SAS/ODS**

1. Introduction

- How to Use this Document
- Little Bit History About SAS
- What is SAS?
- Launching SAS
- Windows in SAS for Windows
- Menus in SAS
- Working within SAS
- Using the Cursor
- Using Icons
- Using the Enhanced Editor
- Writing a SAS Program: the DATA Step

2. Introduction to SAS Programming

- Introduction to SAS®
- SAS® Software Versions
- Using SAS for Windows
- System Requirement
- Installing SAS® 9.1.3 for MS.Windows,Unix,Linux,Vms,Open/390

3. Accessing Data

- Introduction
- LIST,COLUMN,FORMTTED AND NAMED input to read raw data
- Using Various Components of an INPUT Statement

- Importing raw data from Excel files, Text files, CSV files, ODBC and Access files Etc... using the import procedure, data step and Import wizard
- Set statement to read and combine SAS data sets
- Using the merge statement to combine SAS data sets
- Appending multiple SAS data sets
- Explaining about User created functions and system defined functions
- Explaining about Types of functions such as Character, Numeric, statistical or mathematical and date or time functions
- Statements and types, global statements and local statements
- Using loops for easy manipulations
- SQL procedure to create data sets
- SQL procedure to query multiple tables

4. Creating Data Structures

- Introduction
- Creating temporary and permanent SAS data sets
- Preparing temporary libraries and permanents libraries
- Applying conditional assignments and conditional subsets
- Using data step statements to export(or write) data to a file
- Exporting data to excel and access using the export procedure
- Understanding how the data step is compiled and executed
- Using data dynamic exchange(DDE) to import excel data
- Exporting SAS files to Excel Using DDE.

5. Managing Data

- Introduction
- Modifying variable attributes in the data set
- Assignment statement to accumulate variable values across executions of the data step
- Using SAS functions to manipulate character data, numeric data, and SAS date and time values
- Creating User defined in formats and Formats
- Changing SAS default setting using system options, data step options and statement options
- Use system defined and user defined formats
- Use system defined and user defined in formats
- Use SAS functions to convert character data to numeric data and vice versa
- Processing data using SAS arrays
- Sorting observations in a SAS data set
- Using SAS utility procedure to investigate SAS data libraries

6. Generating Reports

- Introduction
- Generating reports using the PRINT,MEANS,FREQ,TABULATE,REPORT etc…procedures
- Generating HTML, RTF, PDF, EXCEL, TEXT, CSV, and PDF reports using ODS statements
- Enhancing reports with options and statements

7. Handling Errors

- Introduction…
- Recognizing and correcting syntax and non-syntax errors
- Examining and resolving data errors
- Program debugging techniques

SAS Statistics

8. Descriptive Statistics

- Introduction statistics
- Overview
- Data Presentation
- Data Characteristics: Descriptive Summary Statistics

9. Categorical data Analysis

- Introductions
- Procedures
- Cross tabulations
- Frequencies from one way frequencies to N way frequencies

10. Hypothesis Testing

- T-Test : Testing differences between two means
- Random assignment of subjects
- Two independent samples : Distribution free tests
- One-tailed vs. two tailed tests
- Paired t-tests(related samples)

11. Hypothesis Testing (More than two groups)

- One-way analysis of variance
- Analysis of variance : two independent variables
- Interpreting significant interactions
- Unbalanced designs: Proc GLM

12. Regression Analysis

- Introduction
- Simple regression
- Multiple regression analysis
- Interpretation about statistics such as (R square, adjusted R square, etc…..)

13. Correlation Analysis

- Introduction
- Positive correlation
- Negative correlation
- Multiple correlation
- Linear and non-linear correlation

SAS Macros

- Introduction
- Creating macro variables
- Reusing macro variable
- Working with system defined macro variables and user defined macro variables
- Converting Global macro variables into local macro variables vice versa
- Functions and routines, its different
- Introduction to Macro Processing
- Defining and Calling Macros
- How the Macro Processor Compiles a Macro Definition
- How the Macro Processor Executes a Compiled Macro
- Summary of Macro Processing
- System defined macro options
- Creating macro and Reusing macro
- Executing a macro program
- Passing values to a macro program through macro parameters
- Using SAS Base functions and Proc SQL statements in SAS macros
- Using conditional statements in macros
- Manipulating SAS Base programs to macros
- Macro quoting functions
- Macro facility error messages and debugging
- Using the stored compiled macro facility for saving macro
- Arithmetic and logical expressions
- Reading external files using macros
- Writing SAS files using macros
- Stepwise method for writing macro programs
- Saving Macros in an Auto call Library
- Saving Macros Using the Stored Compiled Macro Facility

SAS SQL

- Introduction to the SQL Procedure
- What Is SQL?
- What Is the SQL Procedure?
- Comparing PROC SQL with the SAS DATA Step
- Creating data sets using SQL procedure
- Overview of the query window
- Retrieving Data from a Single Table
- Retrieving Data from Multiple Tables
- Creating and Updating Tables and Views
- Inserting Rows into Tables
- Updating Data Values in a Table
- Deleting Rows and Tables
- Altering Columns
- Creating an Index
- Using SQL Procedure Tables in SAS Software
- Creating and Using Integrity Constraints in a Table
- Using PROC SQL Options to Create and Debug Queries
- Improving Query PerformanceHYPERLINK "a001385596.htm"Accessing SAS System Information Using DICTIONARY Tables
- Using the Output Delivery System (ODS) with PROC SQL
- Performing simple queries
- Combine tables using inner join, outer join(outer left join, outer right join, outer full join)
- Summarizing groups of data
- Sub setting groups of data
- Handling missing values
- Handling embedded blanks in column names
- Using SAS base functions in SQL
- Building calculated columns
- Reading oracle data tables into SAS by pass through facility
- Connecting to Oracle, DB2, SYBASE, EXCEL, ACCESS, ODBC, OSIRIS, REMOTE, SPDE, SPSS, TERADATA, XML, AND XPORT engines etc…. to import data sets
- Explaining about conditional statements
- Modifying variables using Base Options in SQL
- Creating macro variables in SQL

SAS Graphs

- Introduction
- Drawing graphs by programming and menu driven

- Using colors and images
- Language Elements
- SAS Data Sets
- Using Engines with SAS/GRAPH Software
- Running SAS/GRAPH Programs
- Procedure Output and the Graphics Output Area
- Printing Graphics Output
- Storing Graphics Output in SAS Catalogs
- Modifying SAS/GRAPH Output
- Transporting and Converting Graphics Output
- Using SAS/GRAPH Colors and Images
- Specifying Colors in SAS/GRAPH Programs
- Specifying Images in SAS/GRAPH Programs
- GChart
- GPlot
- Vbar
- Hbar
- Block bar
- Star chart
- Pie chart
- Histogram
- Box plot
- Probability plot
- Scatter plot (two dimensional and three dimensional)
- Surface plot

SAS ODS

- Creating HTML outputs Using ODS
- Creating HTML outputs with a Table of Contents
- Selecting ODS tables for Display
- Excluding ODS tables for Display
- Exporting SAS outputs
- Preparing PDF,RTF,CSV,XML,HTML files using ODS
- Creating an output data set from an ODS tables
- Generating outputs in colors
- Creating an output data set from sub setting the data
- Determining the Names of ODS Tables
- Using the TEMPLATE Procedure to Customize Output
- Creating HTML Output, Linked Within a Single Analysis
- Creating HTML Output, Linked Between Analyses