SAS Industry-Ready Bootcamp

SAS Data Engineer Course

Total Duration: 158 Hours

The SAS® Data Engineer Program is designed to build your expertise in Data Management using SAS Studio Flows(ETL), Data Quality, SAS Programming and Macro facility. Gain hands-on experience with SAS Viya® - the cloud native high-performance software platform to quickly transform raw data into operational insights that support every kind of decision your organization makes and become job-ready for high-demand roles.

Basic Qualifications:

Final year/Graduate/Master's degree: A degree in a relevant field such as Computer Science, Data Science, Information Technology, Statistics, Engineering, or Mathematics preferred. A formal degree is helpful but not always mandatory, depending on practical experience and certifications.

Pre-requisite: Basic understanding of any programming language is preferred, as it will help in grasping core concepts more quickly.

Instructor-Led Content (90 Hours)

SAS Programming I

• The SAS programming process	• Reading and filtering data
• Using SAS programming tools	• Computing new columns
• Understanding SAS syntax. Accessing Data	• Conditional processing. Analyzing and Reporting on Data
• Understanding SAS data.	• Enhancing reports with titles, footnotes, and labels
• Accessing data through libraries	• Creating frequency reports
• Importing data into SAS. Exploring and Validating Data	• Creating summary statistics reports. Exporting Results
• Exploring data	• Exporting data
• Filtering rows	• Exporting reports. Using SQL in SAS
• Formatting columns	• Using Structured Query Language in SAS
• Sorting data and removing duplicates. Preparing Data	• Joining tables using SQL in SAS

SAS Programming II

• Controlling DATA Step Processing
  • Setting up for this course
  • Understanding DATA step processing
  • Directing DATA step output
	• Creating Custom Formats
	  • Creating and using custom formats
	  • Creating custom formats from tables

• Summarizing Data
  • Creating an accumulating column
  • Processing data in groups
	• Combining Tables
	  • Concatenating tables
	  • Merging tables
	  • Identifying matching and nonmatching rows

• Manipulating Data with Functions
  • Understanding SAS functions and CALL routines
  • Using numeric and date functions
  • Using character functions
  • Using special functions to convert column type
	• Processing Repetitive Code
	  • Using iterative DO loops
	  • Using conditional DO loops

	• Restructuring Tables
	  • Restructuring data with the DATA step
	  • Restructuring data with the TRANSPOSE procedure.

SAS Macros

- Introduction
  - Why SAS macro?
  - Setting up for this course
- SAS Macro Facility
  - Program flow
  - Creating and using macro variables
- Storing and Processing Text
  - Macro functions
  - Using SQL to create macro variables
  - Using the DATA step to create macro variables
  - Indirect references to macro variables
- Working with Macro Programs
  - Defining and calling a macro
  - Macro variable scope
  - Conditional processing
  - Iterative processing
- Developing Macro Applications
  - Storing macros
  - Generating data-dependent code
  - Validating parameters and documenting macros

Managing and Querying Data Using Flows in SAS Studio

- Getting Started
  - SAS Viya Overview
  - SAS Studio Licensing
  - Using Flows in SAS Studio
- Working with Flows
  - Using Tasks in a SAS Studio Flow
  - Submitting a Flow in the Background
  - Using Swimlanes and Connections
  - Scheduling a Flow
  - (Self-study) Using Notes in SAS Studio
- Working with Data
  - Understanding Data
  - Understanding SAS Libraries
  - Using the Table Viewer in SAS Studio
  - Importing Unstructured Data Using SAS Studio
  - Exporting SAS Tables in SAS Studio
- Transforming Data
  - Managing Columns Using SAS Studio
  - Filtering Rows Using SAS Studio
  - Sorting SAS Tables in SAS Studio
  - Calculating Columns in SAS Studio
  - Conditionally Calculating Columns in SAS Studio
  - Summarizing and Filtering Data by Groups in SAS Studio
  - Joining Tables in SAS Studio

Developing Custom Steps with SAS® Studio Analyst

- Exploring Custom Steps Working with Custom Steps
  - Creating a simple custom step
  - Working with input and output tables
  - Providing interactive column selections
- Enhancing Custom Steps
  - Setting values conditionally
  - Using prompt hierarchies
  - Creating dependencies

Using SAS® Studio Engineer Steps in SAS® Studio Flows

- SAS Studio Engineer
  - What is SAS Studio Engineer?
  - Using SAS Studio Engineer steps in SAS Studio flows
- Data Integration Steps
  - SAS Data Integration overview
  - The Load Table step
  - The Merge Table step
  - The Implement SCD step
  - The Execute Decisions step
- Data Quality Steps
  - SAS Data Quality overview
  - The Clean Data step
  - The Match Codes step
  - The Parse Data step
- Data Transformation Steps
  - SAS Data Transformation overview
  - The Union Rows step
  - The Mask Data step

Workshop and Self-Paced Learning (68 Hours)

In addition to the above mentioned duration, each track will have an additional module for you to learn at your own pace.

- **Data Literacy Essentials & Practice**
  Learn what is data, what does it mean to be data literate, and why is it important in today's world?
- **Generative AI Using SAS®**
  Learn about different types of GenAI and see examples of how SAS can enhance your efforts to make the most of these techniques
- **SAS Analytics getting Started**
  Learn the skills you need to acquire to use SAS Viya's functionality in the fields of Predictive Modeling, Time Series, Forecasting and Optimization.
- **Resonsible Innovation and Trustworthy AI**
  This course focusses on foundational knowledge and skills to consider the issues related to responsible innovation and trustworthy AI
- **SAS® Programming for R Users**
  Learn to apply R skills in SAS Environment
- **Modern Data Science with SAS Viya Workbench and Python**
  SAS Viya Workbench will help you explore how to access, transform, and analyze data from cloud object storage and data lakehouses, then build machine learning models in both SAS and Python

Global Certification Mapping:

1. SAS Programming 1 + SAS Programming 2

Global Certification: SAS Certified Specialist: Base Programming Using SAS 9.4

84% said a SAS certification improved their performance and advanced their careers.

- Coursera Survey conducted by SAS, 2020

Super Specialization for Data Engineer Course

Course Name	Prerequisite	Duration	Global Certification
• SQL1: Essentials • SAS Programming 3: Advanced Techniques	SAS Programming 2: Data Manipulation Techniques	2 Days	SAS Certified Professional: Advanced Programming Using SAS 9.4
• Accelerating SAS® Code on the SAS Viya Platform	SAS Programming 1 & 2	2 Days	SAS Viya Programming Associate

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