

# NUTECH COMPUTER TRAINING INSTITUTE

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## SAS BASE PROGRAMMING CERTIFICATION COURSE OVERVIEW

### REQUIRED EXPERIENCE:

Successful candidates should have at least one year of current SAS programming experience and should be able to:

- import and export raw data files
- manipulate and transform data
- combine SAS data sets
- create basic detail and summary reports using SAS procedures
- identify and correct data, syntax and programming logic errors.

SAS Programming I: Essentials

SAS Programming II: Manipulating Data with the DATA Step.

Source: <http://support.sas.com/certify/credbp.html>

### Content:

#### Accessing Data

- Use FORMATTED, LIST and COLUMN input to read raw data files
- Use INFLE statement options to control processing when reading raw data files

- Use various components of an INPUT statement to process raw data files including column and line pointer controls, and [trailing@controls](#)
- Combine SAS data sets using the DATA step

### Creating Data Structures

- Create temporary and permanent SAS data sets
- Create and manipulate SAS date values
- Use DATA Step statements to export data to standard and comma delimited raw data files
- Control which observations and variables in a SAS data set are processed and output

### Managing Data

- Investigate SAS data libraries using base SAS utility procedures
- Sort observations in SAS data set
- Conditionally execute SAS statements
- Use assignment statements in the DATA step
- Modify variable attributes using options and statements in the DATA step
- Accumulate sub-totals and totals using DATA step statements
- Use SAS functions to manipulate character data, numeric data, and SAS date values
- Use SAS functions to convert character data to numeric and vice versa
- Process data using DO LOOPS
- Process data using SAS arrays

### Generating Reports

- Generate list reports using the PRINT and REPORT procedures
- Generate summary reports and frequency tables using base SAS procedures
- Enhance reports through the use of labels, SAS formats, user-defined formats, titles, footnotes and SAS System reporting options
- Generate HTML reports using ODS statements

### Handling Errors

- Identify and resolve programming logic errors
- Recognize and correct syntax errors
- Examine and resolve data errors

# SAS Programming I : Essentials

## Getting Started with the SAS System

- accessing the SAS System
- navigating among the SAS programming windows
- understanding the difference between batch mode and interactive mode
- opening and submitting a program in the Program Editor window
- checking the SAS log for program errors
- examining your program output
- understanding data sets, variables, and observations
- understanding DATA and PROC steps
- diagnosing and correcting programming errors
- explaining SAS syntax and SAS naming conventions

## Getting Familiar with SAS Data Sets

- explaining the concept of a SAS data library
- differentiating between a permanent library and a temporary library
- investigating a SAS data library using the CONTENTS procedure

## Producing List Reports

- generating simple list reports using the PRINT procedure
- displaying selected columns and rows in a list report
- displaying a list report with column totals
- sorting observations in a SAS data set
- controlling page breaks for subgroups
- identifying observations using the ID statement

## Enhancing Output

- customizing report appearance
- formatting data values
- creating HTML reports

## Creating SAS Data Sets

- reading raw data files using column input and formatted input
- examining data errors
- assigning variable attributes
- reading Microsoft Excel spreadsheets

## DATA Step Programming

- reading SAS data sets and creating variables
- executing statements conditionally using IF-THEN logic
- controlling the length of character variables explicitly with the LENGTH statement
- selecting rows to include in a SAS data set
- selecting variables to include in a SAS data set
- using SAS date constants
- reading date fields from Microsoft Excel spreadsheets

## Combining SAS Data Sets

- using the SET statement to concatenate two or more SAS data sets
- using the RENAME= data set option to change the names of variables
- using the SET and BY statements to interleave two or more SAS data sets

## Producing Summary Reports

- creating one-way and two-way frequency tables using the FREQ procedure
- generating simple descriptive statistics using the MEANS procedure
- using the REPORT procedure to create a listing report
- using the RBREAK statement to produce a grand total
- creating tabular summary reports using the TABULATE procedure

## **SAS Programming II : Manipulating Data with Data Step**

### Controlling Input and Output

- outputting multiple observations
- writing to multiple SAS data sets
- selecting variables and observations
- writing to external files

### Summarizing Data

- creating an accumulating total variable
- accumulating totals for a group of data

### Reading and Writing Different Types of Data

- reading delimited raw data files
- controlling when a record loads
- reading hierarchical raw data files

### Data Transformations

- manipulating character variables
- manipulating numeric variables
- manipulating numeric variables based on dates
- converting variable type

## Processing Data Iteratively

- performing DO loop processing
- performing SAS array processing

## Combining SAS Data Sets

- match-merging two or more SAS data sets
- performing simple joins using the SQL procedure