



## SAS (Statistical Analysis Software/System)

### Clinical SAS:-

<b>Class Room:</b> Training Fee & Duration : 23K & 3 Months	<b>Online:</b> Training Fee & Duration : 25K & 3 Months
--	--

### Learning SAS:

#### **Getting Started with SAS**

- Basic overview about SAS software
- Basic about programming

#### **Working with SAS syntax**

- Fundamental concepts
- Characteristics of SAS statements
- Explain SAS syntax rules

#### **Getting Familiar with SAS dataset**

- Descriptor & Data portions
- Accessing SAS libraries

#### **Reading SAS datasets**

- How to read data in SAS
- SAS data as input
- Observations & variables

#### **Reading SAS datasets**

- Descriptor & Data portions

#### **Reading Excel worksheets**

- Overview about importing Excel file

#### **Reading Delimited Raw data files**

- How to read raw data
- Compilation & Execution phases of Data step

#### **Validating and cleaning data**

- Procedures for validating data
- Techniques for cleaning data

#### **Manipulating data**

- Variable creation
- Sub setting Observation

#### **Combining SAS Datasets**

- Appending, concatenating dataset
- Merging the SAS dataset

#### **Enhancing Report (ODS systems)**

- Global statements
- Format & Label Statement
- User Defined formats
- Sending output to external files (HTML,PDF,RTF)

E-Mail ID; [contact@covalentech.com](mailto:contact@covalentech.com) Phone: +91-9848733309/+91-9676828080

[www.covalentech.com](http://www.covalentech.com)

**Summary Reports**

- FREQ Procedure
- MEANS Procedure
- How to use procedures in Clinical trials

**Controlling Input and Output**

- Outputting multiple Observation
- Writing to Multiple SAS Datasets
- Selecting Variables & Observations

**Summarizing Data**

- Creating an Accumulating Total variable

**Reading Raw Data Files****Data Transformations**

- Manipulating character & numeric variables
- Converting Variable type

**Processing Data iteratively**

- Do loop processing
- SAS Arrays

**Restructuring a Data set****TRANSPPOSE Procedure****Learning Excel:****The Basics**

- Creating a New Workbook
- Navigating in Excel
- Moving the Cell Pointer
- Using Excel Menus
- Using Excel Toolbars: Hiding, Displaying, and Moving Toolbars
- Entering Values in a Worksheet and Selecting a Cell Range
- Previewing and Printing a Worksheet
- Getting Help from the Office Assistant
- Saving a Workbook & Re-opening a saved workbook

**Formatting a Worksheet**

- Creating Headers, Footers, and Page Numbers
- Adjusting Page Margins and Orientation
- Adding Print Titles and Gridlines, rows to repeat at top of each page
- Formatting Fonts & Values
- Adjusting Row Height and Column Width
- Changing Cell Alignment
- Adding Borders
- Applying Colors and Patterns
- Using the Format Painter
- Using AutoFormat
- Merging Cells, Rotating Text, and using AutoFit
- Using AutoFill

**Managing your workbooks**

- Switching Between Sheets in a Workbook
- Inserting and Deleting Worksheets
- Renaming and Moving Worksheets

**E-Mail ID;** [contact@covalentech.com](mailto:contact@covalentech.com) **Phone:** +91-9848733309/+91-9676828080

**www.covalentech.com**

- Protecting a Workbook
- Hiding Columns, Rows and Sheets
- Splitting and Freezing a Window
- Inserting Page Breaks
- Advanced Printing Options

#### **Editing a Workbook**

- Entering Date Values and using AutoComplete
- Editing, Clearing, and Replacing Cell Contents
- Cutting, Copying, and Pasting Cells
- Moving and Copying Cells with Drag and Drop
- Collecting and Pasting Multiple Items
- Using the Paste Special Command
- Inserting and Deleting Cells, Rows, and Columns
- Using Undo, Redo, and Repeat
- Checking Your Spelling
- Finding and Replacing Information
- Inserting Cell Comments

#### **Formulas**

- Creating a basic Formula
- Calculating Value Totals with AutoSum
- Editing & Copying Formulas
- Fixing Errors in Your Formulas
- Formulas with Several Operators and Cell Ranges

#### **Working with the Forms Menu**

- Sorting, Subtotaling & Filtering Data
- Copy & Paste Filtered Records
- Using Data Validation

#### **Creating & Working with Charts**

- Creating a Chart
- Moving and Resizing a Chart
- Formatting and Editing Objects in a Chart
- Changing a Chart's Source Data
- Changing a Chart Type and Working with Pie Charts
- Adding Titles, Gridlines, and a Data Table
- Formatting a Data Series and Chart Axis
- Annotating a Chart
- Working with 3-D Charts
- Selecting and Saving a Custom Chart
- Using Fill Effects
- Mapping Data
- Modifying a Map

#### **Data Analysis & Pivot Tables**

- Creating a PivotTable
- Specifying the Data a PivotTable Analysis
- Changing a PivotTable's Calculation
- Selecting What Appears in a PivotTable
- Grouping Dates in a PivotTable
- Updating a PivotTable

- Formatting and Charting a PivotTable

#### **Lookup table**

- Lookup()
- Vlookup()
- Hlookup()
- Application of exact match and approximate match
- Creating an order form using vlookup function

#### **Statistics with Excel**

- Annova: Single Factor
- Annova: Two Factor with Replication
- Annova: Two Factor without Replication
- Correlation
- Covariance
- Descriptive Statistics
- Exponential Smoothing
- F-Test Two-sample for variances
- Fourier analysis
- Histogram
- Moving Average
- Random Number generation
- Rank and Percentile
- Regression
- Sampling
- T-test: paired two sample for means
- T-test: two-sample assuming equal variances
- T-test: two-sample assuming equal variances
- Z-test: two-sample for means

### **SQL Procedure:**

#### **Introduction to SQL procedure**

- What is SQL and components of SQL?

#### **Basic Queries**

- Overview of the SQL procedure
- Specifying Columns & Rows

#### **Displaying Query Results**

- Presenting Data
- Summarizing Data

#### **Sub queries**

- Correlated Queries
- Non correlated Queries

#### **SQL Joins**

- Introduction to SQL joins

#### **Set Operators**

- EXCEPT Operator
- INTERSECT Operator
- UNION Operator
- OUTER UNION Operator

### **Creating Tables and views**

- Creating view with SQL procedure

### **Interfacing SQL with Macro Language**

### **Managing Tables**

### **Use of SQL in Clinical Trials**

## **Macro language (SAS Macro):**

### **Macro Variables**

- Introduction to Macro Variables
- Automatic macro variables
- Macro variable References
- User Defined Macro variables
- Macro Functions

### **Macro definitions**

- Defining and Calling a macro
- Macro parameters & Storage

### **Data Step and SQL Procedure**

- Creating Macro variables in the Data step
- Indirect References to Macro Variables
- Creating Macro Variables in SQL

### **Macro Programs**

- Conditional processing
- Global and Local macro variables

### **Use of Macro language**

## **SAS Enterprise Guide:**

### **Introduction**

- Starting SAS Enterprise Guide
- SAS Enterprise Guide windows
- Basic elements of SAS Enterprise Guide
- Entering data
- Creating a list report
- Producing a frequency report
- Creating a scatter plot
- Adding a note to the project
- Saving the project

### **Reading Data from Files**

- Opening a SAS data set from your local computer
- Opening a SAS data set stored in a SAS library
- Opening a Microsoft Excel file

### **Creating Reports**

- Creating a simple report
- Changing titles and footnotes
- Changing column labels and formatting values
- Defining your own formats
- Creating a grouped report
- Selecting a style for the report

**Working with Data in the Query Builder**

- Opening the Query Builder
- Selecting columns
- Creating a new column
- Ordering and removing columns
- Filtering data
- Sorting the data rows

**Joining Two Data Files Together**

- Opening the two data files to be joined
- Joining tables
- Filtering the data
- Modifying the type of join

**Clinical Trial Project (SAS):-****Clinical Research-Clinical Trials**

- Basics of Clinical Research
- ICH GCP Guidelines
- Good programming Practices
- Use of SAS in Clinical Research
- Demo project for Clinical trial study

**CDISC SDTM Overview:**

- Introduction to CDISC Data Models
- Understanding CDISC - SDTM
- Understanding CDISC – ADaM
- Understanding CDISC – SEND
- Introduction to Protocol, SAP & CRF
- Study Populations, Study Day Calculation
- SAS Programming Guidelines
- Creating listings
- Creating Baseline Characteristic Table - 1
- Creating Baseline Characteristic Table - 2
- Creating Safety Table-1
- Creating Safety Table-2
- Creating Safety (Shift) Table-3
- TLF & TLC