



**Sunil Gupta, Gupta Programming**

SAS Author, CDISC SME, Simi Valley, CA

<https://R-Guru.com>

Limited Seats, Register @ [GuptaProgramming@gmail.com](mailto:GuptaProgramming@gmail.com)



## ***R for SAS Statistical Programmers w/ Pharma Focus***

***Avoid the Steep Learning Curve! Master R Today!***

*'If you want to learn R smoothly, then R-Guru has the course to attend. Sunil Gupta is an absolute expert on his field and gives an approach what to learn and also what not to learn in a structured way.'*

*Jens Pfeil, Senior Statistical Programmer, Metronomia Clinical Research GmbH*

### **COURSE DESCRIPTION**

This unique hands-on up to 16-hours online class content teaches SAS programmers essential concepts about common R packages (Tidyverse, DPLYR, magrittr (%>% Piping), Haven, Hmisc, readxl, writexl, GT & ggplot2) and the R programming language. On a weekly, on-line basis, attendees learn how to access, create and process R data frames in data management, reporting and analysis. In addition, this class shows best practices in how to select, filter, derive, append and join data frames using SQL type code. Ideal for the pharmaceutical industry, examples of both SDTM and ADaM datasets will be created. This is important for Statistical SAS Programmers to be consistent with FDA, CDISC, and big pharma companies. Finally, tables, lists and graphs will be created from SDTMs and ADaMs.

Students are expected to complete assigned R programming exercises in student journals on a weekly basis as well as give a 5 -8 minutes R presentation on their R topic by the end of the class. All students will receive a copy of all R programs reviewed in class. Also included is three months access to [R-Guru.com](https://R-Guru.com) for rich content on R programming topics, task examples, e-books, [cheat sheets](#) and more. Finally, students have free email R mentoring and support for three months.

### **COURSE SUMMARY and OBJECTIVES**

One of the first steps is to learn how R reads and converts data files into R data frames. In this section, focus on R packages, functions and parameters to import and export files into and from R data frames. Once R data frames are created, make sure to review all variables and sample data.

After learning how to transform data files into R data frames, next you should learn how to construct from variables and rows from data values to build R data frames. Once R data frames are created, then data management operations should be learned. In this section, focus on how to select, drop and filter variables and records. In addition, also learn how to derive new variables.

After learning how to process variables and records in R data frames, next you should learn how to join, append, summarize and transpose data frames. In this section, focus on understanding how R data frames work together, are summarized and transposed into new R data frames.

Next, you will learn about the Tidyverse package since it is a very powerful and a common R package. The Tidyverse package has many advantages over base R functions such as keyword specific function names and are easier to apply. In this section, you learn that many of the tasks completed to date can be done with Tidyverse.

Next, you will learn about the DPLYR package since it simulates SQL type operations. DPLYR is an R package within Tidyverse and also many advantages over base R functions such as keyword specific function names and are easier to apply. In this section, focus on how to select, drop and filter variables and records. In addition, also learn how to derive new variables as well as how to stream R commands with piping.

In this lesson, you are ready to apply what you have learned from creating and transforming R data frames into learning how to create SDTMs. In this section, focus on the different types of SDTM variables and the methods to create them. Make sure to confirm all derived variables.

In this lesson, you are ready to create ADaMs from SDTMs. In this section, focus on the different types of ADaM variables and the methods to create them. Make sure to confirm all derived variables and records.

In this lesson, you are ready to create Tables, Lists and Graphs from ADaMs. In this section, focus on how to summarize data and construct the final R data frame into a table, list or graph. Leverage R packages and functions as templates for tables, lists and graphs. Make sure to export the results in the required file type such as rtf, pdf or html, for example.

## **COURSE OUTLINE**

### **A. Tasks for learning setup for R Programming: Importing Data into R Data Frames**

- Install R Packages and Load Libraries
- Access CSV, Excel, R Data Frames and SAS Data sets

### **B. Tasks for learning basic R Programming: Vectors > Data Frames > Data Management > Join > Summarize > View**

- Create Variables as Vectors and Assign Values or read CSV, Excel, SAS file into Data Frames
- Create Data Frames from Vectors
- Data Management Operations and Functions
- Join and Append Data Frames
- Summarize, Transpose and Format Data Frames, View and Display Data Frames

### **C. Tasks for learning advanced R Programming: Tidyverse > DPLYR (SQL) %>%**

- Tidyverse Package for Data Management
- DPLYR for SQL
- R Piping %>%

### **D. Tasks for learning R Programming for Pharmaceutical Industry: SDTMs > ADaMs > Tables, Lists and Graphs**

- Create SDTMs and ADaMs
- Summary Tables and Lists using GT package
- Statistical Analysis, Create Graphs using ggplot2 package

**Course Length:** Up to 16-Hours Course Content with Lectures, Exercises and Discussions