**DataSmartScience: Democratizing Data Science Smartly for Development**

**Learning Objectives**

1. Must be able to use to clean a very “dirty” data
2. Must be able to use SQL in daily R data wrangling activities
3. Visualize data
4. Must be able to estimate a model with R
5. Must be able to handle big data in R

**Strategies to achieve objectives (The What, How and Why you do certain things):**

*Part 1: Data Centric Foundational R Programming*

1. Concept of a variable
2. What is a variable?
3. Types of variables mostly used for data analysis
4. Go back to what we usually use for data analysis at the basic level: Excel
5. Create Data
6. Select a column (s)
7. Select subsections of row(s)
8. Rename columns
9. Delete columns and rows
10. Use functions on data
11. How can we use R to do basic Excel stuff?
12. Core R
13. R studio
14. Project Management
15. Connecting R studio with GitHub
16. Vectors
17. Data Frame
18. Rename columns
19. Delete columns
20. Subletting or filtering
21. Writing functions and why are they useful?
22. Control structures and why are they useful?
23. If-else
24. For loops
25. Nested loops

Lab/coding exercise – Group Work

*Part 2: R marries SQL*

Work with the SDLF package to integrate SQL with R

*Part 3: Tidyverse Package and Functional Programming*

1. Tidyverse package
2. What is Tidyverse Package
3. Why is it a must know package for data analysis in R
4. Use cases of Tidyverse package
5. Functional programming with PURR package

Lab/coding Exercise ---Group work

*Part 4: GGPLOT for Data Visualization*

1. What is data visualization?
2. Why is it important for data analysis?
3. Introducing GGPLOT for data analysis in R
4. Use cases of GGLOT in R

Lab/coding Exercise ---Group work

*Part 5: R marries Spark for Big Data*

1. What is big data?
2. Why do we need special tools for big data analytics?
3. What is Spark?
4. What is RSparkling?
5. Use cases of RSparkling for big data analysis

Lab/coding Exercise ---Group work

*Part 6: Introducing R for Report Writing and Presentations*

1. What is Rmarkdown?
2. Understanding Rmarkdown.
3. Use cases of Rmarkdown
4. PDF document generation
5. HTML document generation
6. Word document generation
7. Converting Rmarkdown to presentation slides

Lab/coding Exercise ---Group work

*References*