**Data Analysis with R Language**

Course Number xxx – 24 Hours

ENG8

R is a popular open-source language and environment that allows powerful and fast manipulation of data, offering many statistical and graphical options including state-of-the-art modeling methods. The R environment is highly extensible, and is increasingly being adopted by a wide range of researchers worldwide.

This course aims to introduce R as a tool for statistics and graphics, with the main aim being to become comfortable with the R environment. It will focus on entering and manipulating data in R and producing simple graphs. A few functions for basic statistics will be briefly introduced, but statistical functions will not be covered in detail

ENG1

* Understand the Basics of Working with R
* Manipulate Data with R
* Producing Simple Graphs with R
* Define Models in R
* Use R for Analyzing Data

ENG6

This course is designed for data analysts, seeking to obtain a solid foundation of R language for data analysis and graphics.

ENG5

* Basic programming skills
* Some statistical knowledge and some experience of data analysis is highly recommended

ENG13

**Module 1: Introduction to R**

* What is R?
* Getting & Installing R
* The R User Interface
* R Packages

**Module 2: R Basics**

* Basic Objects and Data Types
* Probability Distributions
* Matrices, Arrays, Data Frames, and Factors
* R Packages

**Module 3: Graphics with R**

* Plotting Data in R
* Ways of Plotting in ggplot2
* Graphically Exploring the Diamonds Dataset
* Creating "new" Plots

**Module 4: Statistical analysis with R**

* Linear models
* Generalized linear models

**Module 5: Advanced statistical modeling with R**

* Density estimation
* Survival analysis
* Classification
* Clustering

**Module 6: Advanced graphics**