

## Workshops/Training courses

**Spring 2024**

### Workshop #2

**Title:** Introduction to Data Analytics using R

**Statistical Software:** R

**Requirements:** R and R-Studio

**Instructor:** Dr. Zardad Khan

**Target Group:** Students and Faculty

**Date:** March 11 – March 17

**Period:** (12 Hours), 3 days, 4 hours/day

**Platform:** Face-to-face Meeting

**Inclusive of Scientific Materials:** PowerPoint Slide Presentation, Online Resources and E-Certificate.

#### Description:

R is one of the best programming languages specifically designed for statistics and graphics. Programming in R is a fast and effective way to perform advanced data analyses and manipulations. In this course, you will learn how to use R and utilize the many data analysis techniques, methods, and functions it has to offer to professional researchers. Basic concepts and techniques in programming such as recognizing and changing data types, reading in and writing out data, indexing, loops, creating functions, iterations, manipulating data and creating plots will be covered. Frequently used statistical data analysis techniques will also be covered. By the end of this course, you will be able to use R for your own data analysis.

#### Topics Covered:

##### Day 1:

1. What is R?
2. Philosophy and concept of R
  - a) user interface and concept
  - b) editors
  - c) getting help for R
3. Simple programming
  - d) operations/functions/values
  - e) vectors/matrices
  - f) data sets
  - g) writing your own functions

##### Day 2:

1. Data Management
  - a. Import and view data sets
  - b. Modify and restructure data sets
  - c. Select rows and columns of a data set
  - d. Manipulate data sets (sort, transform, insert or delete rows/columns)
  - e. Save data sets
2. Descriptive Statistics
  - a. Measures of location & measures of spread
  - b. Correlation Simple analyses
  - c. Missing values
  - d. Frequency & contingency tables
  - e. Save results
3. Graphics
  - a. Introduction
  - b. Types of graphics
    - i. incl. formatting
    - ii. adding titles, legends, formulas, . . .
  - c. Save graphics

### Day 3:

1. Diagnostic tests
  - a. Definitions and Basics
  - b. Quality of Diagnostic Tests
  - c. ROC Analysis
2. Statistical Tests
  - a. Various parametric and non-parametric tests
3. Linear Models
4. Variable Selection
5. Logistic Regression

**Workshop Fee:** 1500 AED\*

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