

## **DBA3702 Descriptive Analytics with R**

**Lecturers :** A/P Liu Qizhang (Co-ordinator)

**Session:** Semester 1, 2021/2022

### **Description**

We are now at the era of *big data*. Data and algorithms dominate the day. Competitive advantage, for more and more enterprises, is obtained via data analytics and idea sharing in the current fast-paced, data-intensive, and open-source business environment. The capability of understanding data, digging out valuable insights from data, and thus making right managerial decisions accordingly has gradually become an essential skill that business graduates must master in order to excel in their career.

This course prepares students with fundamental knowledge of using R, a powerful complete analytical environment, to organize, visualize, and analyze data. It is, however, not a programming course. It will focus on case studies that will train students how to summarise and present findings in a structured, meaningful, and convincing way.

### **Course Outline**

#### **1) Foundations of R Programming**

- a) Introduction to R Environment
- b) Data types
- c) Vectors, Lists and Matrices
- d) Functions
- e) Control Structure

#### **2) Exploring and Discovering Data**

- a) Introduction to XML
- b) Obtaining Data, both offline and online
- c) Data Cleaning
- d) Data Transformation
- e) Pivot Table with R

#### **3) Basic Data Visualisation**

- a) Bar plots
- b) Pie Charts
- c) Histograms
- d) Kernel Density Plots
- e) Box Plots
- f) Dot Plots

#### **4) Basic Statistics**

- a) Descriptive Statistics
- b) Nonparametric tests of group difference
- c) ANOVA Models

#### **5) Resampling Statistics and Bootstrapping**

- a) Permutation Tests
- b) Bootstrapping

## **6) Advanced Data Visualisation**

- a) Advanced Graphics with ggplot2
- b) Spatial graph

### **Reading List**

“Business Analytics for Managers”, Wolfgang Jank, Springer.

“Data Mining and Business Analytics with R”, Johannes Ledolter, Wiley.

“Marketing Data Science”, Thomas W. Miller, Pearson.

### **Prerequisites**

DAO1704

### **Assessment**

Continuous Assessment :

Class Participation	20%
Group Project	30%
Test 1	25%
Test 2	25%

**Session**: Semester 2, 2021/2022

### **Description**

We are now at the era of *big data*. Data and algorithms dominate the day. Competitive advantage, for more and more enterprises, is obtained via data analytics and idea sharing in the current fast-paced, data-intensive, and open-source business environment. The capability of understanding data, digging out valuable insights from data, and thus making right managerial decisions accordingly has gradually become an essential skill that business graduates must master in order to excel in their career.

This course prepares students with fundamental knowledge of using R, a powerful complete analytical environment, to organize, visualize, and analyze data. It is, however, not a programming course. It will focus on case studies that will train students how to summarise and present findings in a structured, meaningful, and convincing way.

### **Course Outline**

#### **7) Foundations of R Programming**

- a) Introduction to R Environment
- b) Data types
- c) Vectors, Lists and Matrices
- d) Functions
- e) Control Structure

#### **8) Exploring and Discovering Data**

- a) Introduction to XML

- b) Obtaining Data, both offline and online
- c) Data Cleaning
- d) Data Transformation
- e) Pivot Table with R

**9) Basic Data Visualisation**

- a) Bar plots
- b) Pie Charts
- c) Histograms
- d) Kernel Density Plots
- e) Box Plots
- f) Dot Plots

**10) Basic Statistics**

- a) Descriptive Statistics
- b) Nonparametric tests of group difference
- c) ANOVA Models

**11) Resampling Statistics and Bootstrapping**

- a) Permutation Tests
- b) Bootstrapping

**12) Advanced Data Visualisation**

- a) Advanced Graphics with ggplot2
- b) Spatial graph

**Reading List**

“Business Analytics for Managers”, Wolfgang Jank, Springer.

“Data Mining and Business Analytics with R”, Johannes Ledolter, Wiley.

“Marketing Data Science”, Thomas W. Miller, Pearson.

**Prerequisites**

DAO1704

**Assessment**

Continuous Assessment :

Class Participation	20%
Group Project	30%
Test 1	25%
Test 2	25%