



University of Sri Jayewardenepura
Faculty of Applied Sciences
Department of Statistics

Batch: 2016/2017

Year: 2020

Semester: First Semester

Course Unit: STA 326 2.0 Programming and Data Analysis with R

Type of the course unit: Core for special degree students/ Optional for others

Pre-Requisites:

STA 114 2.0 Probability and Distribution Theory I, STA 123 2.0 Probability and Distribution Theory II, STA 124 1.5 Data Analysis I, STA 226 1.5 Data Analysis II

Workload:

100 learning hours. This includes approximately 30 hours of lectures and additional time spent by the student on self-learning, assignments and assessments.

Course Objective(s):

- To introduce R programming for data science applications.
-

Course Contents:

1. R basics: Objects in R, Data types, Operations, Installing packages, Control structures, Piping
2. Writing functions in R
3. Data analysis with the tidyverse
 - 3.1. Data import and export
 - 3.2. Data wrangling: Tidy data principles, Reshaping data into tidy form, Data transformation
 - 3.3. Data visualization: The grammar of graphics
 - 3.4. Statistical modelling and inference
 - 3.5. Communication: Dynamic reproducible reporting

Learning Outcomes: At the end of this course, the student should be able to:

- download and install R and R Studio
- navigate and optimise the R integrated development environment (IDE) R Studio
- install and load add-in packages
- import external data into R for data processing and statistical analysis
- learn the main R data structures – vector and data frame
- compute basic summary statistics
- produce data visualisations with the ggplot package

Method of Assessment:

- Mid-semester examination: 20%
- Final examination: 80%

Recommended Readings:

- Course website: Everything you want to know about the course, and everything you will need for the course (links to weekly reading, tutorials and lecture materials) will be posted at hellor.netlify.com
Author: Thiyanga Talagala
- Title: R for Data Science
Author(s): Hadley Wickham and Garrett Grolemund
Publisher: O'REILLY
This book is available online for free. Visit <https://r4ds.had.co.nz/>

Lecturer in Charge:

Name: Dr Thiyanga Talagala

Email: ttalagala@sjp.ac.lk

Note: The course can be dropped on or before 13 February 2020.