University of Sri Jayewardenepura
Faculty of Applied Sciences
Department of Statistics

Batch: 2015/2016 **Year: 2020** **Semester: First Semester**

Course Unit: STA 479 2.0 Special Topics in Statistics

Type of the course unit: Optional

Pre-Requisites:
STA 124 1.5 Data Analysis I, STA 226 1.5 Data Analysis II, STA 326 2.0 Programming and Data Analysis with R

Workload:
Minimum total expected workload to achieve the learning outcomes for this unit is 100 hours per semester typically comprising a mixture of scheduled learning activities, independent study and 26 hours of lectures. Independent study may include associated readings, assessment and preparation for scheduled activities.

Course Objectives:

- To introduce data visualisation principles, theories and techniques.
- To introduce how to better understand your data, present findings and tell engaging data stories that clearly depict the points you want to make all through data graphics.

Course Contents:

1. Introduction to data visualisation: History of data visualisation, Design principles, Visualisation design process
2. Scientific design choices in data visualisation: Static graphics, Choice of graphical form, Display options (scale, colour, sorting, annotation, positioning, etc)
3. The grammar of graphics
4. Higher-dimensional displays and special structures: Scatterplot Matrices, Parallel Coordinates, Mosaic Plots, Small multiples and trellis displays
5. Visualisation of high-dimensional data
6. Visualisation of multivariate data, time series data and spatial data
7. Linked data views for visual exploration
8. Dashboards, interactive and animated displays

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

- Define principles of good visualisation design.
- Explain design principles.
- Identify appropriate data visualisation techniques.
- Create data graphics using the ggplot2 package.
- Design and create data visualizations for your target audience and task.
- Conduct exploratory data analysis using visualisation.
- Compare different data visualisations.
- Craft visual presentations of data for effective communication.
- Develop dynamic visualisations that allow others to interact with data.
- Critique existing visualisations based on data visualization theory and principles.
- Revise data visualisations using appropriate design principles.

Method of Assessment:

- Continuous assessment: 40%
- Final project: 60%

Recommended Readings:

- Title: Handbook of Data Visualization
  Author(s): C. Chen, W. Hardle and A. Unwin
  Publisher: Springer

- 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:

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