Course Outline

Field	Details
Course Code	DBA3702
Course Title	Descriptive Analytics with R
Class Date	From **January 202 6** To **May 202 6** (Semester 2)
Semester	Semester 2, Academic Year 2025/202 6
Faculty	NUS Business School
Department	Department of Analytics & Operations
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Overview

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 Objectives

After the course, students should be able to:

1. Clean, transform, and manage data efficiently with R programme with help of Gen AI.
2. Develop meaningful and insightful visualisations for a given data case using R

programme with help of Gen AI.

3. Ask appropriate questions in-depth to explore a given data case.
4. Properly interpret the insights from data visualisations and make informed business decisions.

Assessment

Assessment Components	Weightage
Individual Assignment	25%
Group Assignment	15%
Midterm Exam	25%
Team Term Paper Proposal Presentation	10%
Team Term Paper	20%
Class Participation	5%

Note:

- **Midterm:** Conducted in class in the middle of the semester after the reading week.
- **Individual Assignment:** Expected to be completed alone. Generally due in-class. Soft copy including code files must be submitted.
- **Group Assignment:** Expected to be completed in a group. Soft copy including code files must be submitted.
- **Final Project:** Includes a one-page proposal (Problem, Data, Techniques, Goal), a written report (max 4 pages), and a 15-minute presentation.

Schedule and Outline

Lesson/ Week	Session
1	Course overview, Introduction to R Environment
2	R Basics: Data types and data structure
3	Basic Data Wrangling: Data sorting, data indexing, data wrangling
4	Advanced Data Wrangling: Loading data, Scrapping data online, data cleaning, reshape data
5	Programming Structure: Function, programming structure, apply functions
6	Simulation modelling
7	Data exploration, basic data visualisation
8	Data transformation, Visualising spatial data
9	Case study
10	Midterm
11	Shiny App development
12	Crew AI & its Application
13	Project presentation

General Guide & Reading

Textbook: There is no required textbook for the course.

Suggested Readings:

- *The Analytics Edge* by Dimitris Bertsimas, Allison O'Hair and William Pulleyblank (Dynamic Ideas LLC, 2016). Referred to as the **AE book** .

Academic Honesty & Plagiarism

Academic integrity and honesty is essential for the pursuit and acquisition of knowledge. The University and School expect every student to uphold academic integrity & honesty at all times. Academic dishonesty is any misrepresentation with the intent to deceive, or failure to acknowledge the source, or falsification of information, or inaccuracy of statements, or cheating at examinations/tests, or inappropriate use of resources.

Plagiarism is 'the practice of taking someone else's work or ideas and passing them off as one's own' (The New Oxford Dictionary of English). The University and School will not condone plagiarism. Students should adopt this rule - You have the obligation to make clear to the assessor which is your own work, and which is the work of others. Otherwise, your assessor is entitled to assume that everything being presented for assessment is being presented as entirely your own work. This is a minimum standard. In case of any doubts, you should consult your instructor.

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- Administrative Policies
- http://www.nus.edu.sg/registrar/administrative_-policies-procedures/acceptance_-record#NUSCodeofStudentConduct_
- http://nus.edu.sg/osa/resources/code_-of-student-conduct