

Course Outline

Field	Details
Course Code	DBA4711
Course Title	Applied Analytics
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
Email	bizchaba@nus.edu.sg

Overview

Big data and analytics have climbed to the top of the corporate agenda —with ample reason. Together, they promise to transform the way many companies do business, delivering performance improvements not seen since the redesign of core processes in the 1990s . In this class we examine how data analytics is used to transform businesses and industries, using examples and case studies in e-commerce, healthcare, social media, fintech, pharma and beyond.

Course Objectives

Through examples and case studies, we teach and demonstrate the use of predictive and prescriptive analytics methods such as linear regression, logistic regression, classification trees, random forests, social network analysis, time series modeling, clustering, optimization, and machine learning.

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	Topic	Session Outline / Learning Objectives
Week One	Intro to Analytics	Examples from Industry: Ford, Uber, Google. Introduction to R and R Studio.
Week Two	Network Analytics	More R, Plotting and Visualization in R. Individual Assignment 1 Due on Week Three .
Week Three	Predictive Analytics 1	Generalized Regression.
Week Four	Predictive Analytics 2	Clustering.

Week Five	Predictive Analytics 3	CART, Trees.
Week Six	Predictive Analytics 4	Boosting, Random Forests.
Recess Week		
Week Seven	Midterm	Lectures until Boosting and Random Forests.
Week Eight	Predictive Analytics 5	Time Series Analysis.
Week Nine	Deep Learning I	
Week Ten	Deep Learning II	
Week Eleven	Deep Learning III	Transformers and applications.
Week Twelve	Conclusion and Summary	Netflix and Myntra Case studies.
Week Thirteen	Project Proposal 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.

Additional guidance is available at:

- Administrative Policies
- [http://www.nus.edu.sg/registrar/administrative -policies-procedures/acceptance -record#NUSCodeofStudentConduct](http://www.nus.edu.sg/registrar/administrative-policies-procedures/acceptance-record#NUSCodeofStudentConduct)
- [http://nus.edu.sg/osa/resources/code -of-student-conduct](http://nus.edu.sg/osa/resources/code-of-student-conduct)