

## Course Outline

**Course Code** : DBA3803  
**Course Title** : Predictive Analytics in Business  
**Class Date** : From 13/1/2025 To 18/4/2025  
**Semester** : Semester 2, Academic Year 2024/2025  
**Faculty** : Tan Hong Ming  
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### Overview

This introductory course focuses on key aspects of modern data science in the business world, particularly emphasizing methods in regression and classification. We will cover linear and polynomial regression, logistic regression, and essential techniques such as cross-validation, model selection, and regularization (including ridge and lasso). We'll also venture into nonlinear models, tree-based methods like random forests and boosting, support-vector machines, and neural networks. Finally, we will also touch on interpretable machine learning methods.

### Course Objectives

Gain an understanding of key supervised learning methods including regression and classification techniques.

Learn to apply various data science tools and techniques such as linear and polynomial regression, logistic regression, cross-validation, and model selection.

Learn to apply theoretical concepts in practical, real-world business scenarios, enhancing analytical and decision-making skills.

### Assessment

Assessment Components	Weightage
Class Participation	10%
Group Project	30%
Quiz	30%
Assignments	30%

### Schedule and Outline

This is a rough guide

Lesson/ Week	Session (lesson summary or outline / learning objectives / preparation / cases & assignments / follow-up readings & resources)
1	Introduction
2	Statistical Learning
3	Regression

4	Regression/Classification
5	Classification/Resampling Methods
6	Resampling Methods
R	Reading week
7	Model Selection
8	Tree based Methods
9	Support Vector Machines
10	Deep learning
11	Hari Raya Puasa Holiday
12	Model Interpretability
13	In-class Project

**General Guide & Reading** (e.g. Case preparation guide, project report guide, main textbook & supplementary materials, etc)

Lecture Slides

Taddy, Matt. *Business data science* (2019).

Hull, John C. *Machine Learning in Business: An Introduction to the World of Data Science* (2020).

James, Gareth, et al. *An introduction to statistical learning* (2013).

Cosma Rohilla Shalizi. *Advance Data Analysis from an Elementary Point of View* (2013).

### **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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- <http://www.nus.edu.sg/registrar/administrative-policies-procedures/acceptance-record#NUSCodeofStudentConduct>
- <http://nus.edu.sg/osa/resources/code-of-student-conduct>

