

Course Outline

Course Code : DBA3803
Course Title : Predictive Analytics in Business
Class Date : From 10/8/2026 To 13/11/2026
Semester : Semester 1, Academic Year 26/27
Faculty : Dr Lim Ek Hong
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Overview

This course in predictive analytics will introduce important tools frequently used in data science for businesses. Classes will be a blend of lectures and hands-on exercises. In the first-half of the course, we will cover the fundamentals of regression and classification models, how to deal with high dimensional data, and how to validate our models. In the second-half, we will work with nonlinear models like Tree-based methods and Neural Networks. More practical aspects of data science will also be covered. Here, we will learn how to extend what we have learnt to time-series problems, use Generative AI to enrich our data and finally, learn techniques to interpret nonlinear models.

Course Objectives

- Gain understanding and practical skillsets in the supervised learning methods covered.
- Learn to apply various data science tools and techniques to deal with high dimensional data, validate models, using AI to enrich data and interpret nonlinear models.
- Learn to apply concepts covered in practical, real-world business scenarios, enhancing analytical and decision-making skills.
- Be able to contextualize quantitative methods within business realities. E.g., distinguish correlation from causation, not blindly relying on summary metrics.

Assessment

Assessment Components	Weightage
Class Participation	20%
Group Project	30%
In-Class Project	30%
Individual Assignments	20%

Schedule and Outline

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

3	Regression
4	Classification
5	Resampling Methods
6	Model Selection
R	Reading week
7	Tree based Methods
8	Time Series Forecasting
9	Neural Networks
10	Generative AI for Predictive Analytics
11	Model Interpretability
12	Guest Lecture
13	In-class Project

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

- Lecture Slides
- James, Gareth, et al. *An introduction to statistical learning* (2013).
- Hull, John C. *Machine Learning in Business: An Introduction to the World of Data Science* (2020).
- Taddy, Matt. *Business data science* (2019).
- Cosma Rohilla Shalizi. *Advance Data Analysis from an Elementary Point of View* (2013).
- Dimitris Bertsimas, Allison O’Hair and Bill Pulleyblank, *The Analytics Edge, Dynamic Ideas*, 2016. ISBN: 978-0989910897.

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