

Course Outline

Course Code : DBA3803
Course Title : Predictive Analytics in Business
Class Date : From 12/1/2026 To 17/4/2026
Semester : Semester 2, Academic Year 2025/2026
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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%
In-Class Project	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	Classification
5	Resampling Methods
6	Model Selection
R	Reading week
7	Tree based Methods
8	Support Vector Machines
9	Deep learning and AI
10	Deep learning and AI
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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